BCU Debug DriftShot and 4G Modes | UTM-00301 | Rev 11
SVN 34504

APPROVER: 2019/04/09

Herman van der Walt yyyy/mm/dd

APPROVED

TABLE OF CONTENTS

TABLE OF CONTENTS 2
1 USERS OF THIS MANUAL 4
1.1. Purpose of this manual 4
1.2. End User 4
1.2.1. Requirements 4
1.3. Training 4
1.4. Information 4
2 BCU SYSTEM PRODUCT SAFETY 5
2.1. DetNet Safety Philosophy 5
2.1.1. BlastWeb Network Security 5
2.2. User Safety 5
2.3. Transportation, Storage and Handling 5
2.4. Maintenance Schedule 5
2.5. Information in case of emergency 6
2.6. RF compliance - FCC (USA) and ICES (Canada) 6
2.6.1. Unauthorised Changes 6
2.6.2. Radio Interference 6
2.6.3. FCC Class A digital device notice 6
2.6.4. Labelling Requirements for the Host device 6
2.6.5. CAN ICES-3 (A) / NMB-3 (A) 7
2.7. Warning, Caution, and Note Statements 7
2.8. DISCLAIMER 8
2.9. Pre-requisites 8
3 SAVING LOGS 9
4 CLEAR LOGS 11
5 Calibration 12
6 Date and Time 14
7 System Diagnostics 16
8 Change Debug Password 17
9 Assign Template 18
9.1. Assign Period Templates 19
9.1.1. Period Delay Template 19
9.1.2. Assign Period Delay Template 20
9.2. Assign Intra-det Templates 21
9.3. Edit Channel Offsets 23

DetNet South Africa Copyright © 2019

10 Edit Period Template Times 26
10.1. Edit Intra-det Template Times 28
11 Import, Export and Reset Templates 30
11.1. Export Templates to USB Flash Drive 30
11.2. Import Templates from USB Flash Drive 32
11.3. Reset Templates 34
12 Change BCU Mode 35
12.1. BCU Interface Selection for V2 BCUs 36
13 BCU Settings (or Information) 39
13.1. Change IP Address 40
13.2. Change Mac Address 42
13.3. Change Box ID 44
13.4. Surface Lock Override 46
13.5. Periodic Scan Setup (After locking) 48
13.6. Max Skip Det Setup 50
13.7. Disabled Channel Blasting Setup 51
13.8. Bootload Mode Setup 52

DetNet South Africa Copyright © 2019

1 USERS OF THIS MANUAL

DetNet endeavours to upgrade BlastWeb® software annually to comply with new challenges and needs faced by Centralized Blasting users in the market. As new software becomes available, the DetNet version control policy requires that all control equipment be upgraded to ensure support is provided on the latest software version installed on Surface Blast Controllers as deployed on customer sites.

1.1. Purpose of this manual

The purpose of this manual is to provide a guideline explaining the use of the DEBUG Menu functions in both the DriftShot and 4G modes on the Blast Control Unit (BCU).

NOTE	**This manual is only to be used for the BCU System and the applicable software version as displayed.**

1.2. End User

1.2.1. Requirements

- Only trained personnel, and personnel found competent, are allowed to operate the system.
- Users of the system shall be aware of the recommended procedures for using the BCU System as per manufacturer's recommendations.
- These recommendations do not supersede the method as required by local mine, explosives or statutory regulations/procedures/codes of practise regarding the use of detonators. In such cases, the MOST STRINGENT set of rules between the mine, explosives or local regulations/procedures/codes of practise and the manufacturer must be followed.

1.3. Training

Training and software upgrades shall only be performed by a DetNet SA subject matter expert.
Contact the DetNet head office for additional information.

WARNING	**ALL USERS OPERATING THE BCU SYSTEM SHALL HAVE SUCCESSFULLY COMPLETED THE SPECIFIC TRAINING BEFORE PERFORMING ANY WORK WITH THE DEVICE(S).**

1.4. Information

Refer http://www.detnet.com/ for additional detail and documentation.

DetNet South Africa Copyright © 2019

2 BCU SYSTEM PRODUCT SAFETY

WARNING	**ELECTRONIC DETONATORS ARE TOTALLY DIFFERENT TO CONVENTIONAL ELECTRIC DETONATORS AND ABSOLUTELY NO CONNECTION WITH CONVENTIONAL ELECTRIC DETONATORS OR ANY OTHER ELECTRONIC DETONATORS IS POSSIBLE AS IT CAN LEAD TO UNINTENDED INITIATION. ALL USERS OPERATING THE ELECTRONIC INITIATION SYSTEM SHALL HAVE SUCCESSFULLY COMPLETED THE SPECIFIC TRAINING BEFORE PERFORMING ANY WORK WITH THE DEVICE(S). DO NOT USE ANY DEVICES OTHER THAN THOSE SPECIALLY DESIGNED FOR THIS TYPE OF ELECTRONIC DETONATOR.**

2.1. DetNet Safety Philosophy

DetNet safety philosophy is to design, manufacture and provide control equipment, detonators and accessories to the highest safety standards.

- BlastKeys to remains in possession of the accountable person, and should only be used to complete the blast circuit at such a time as stipulated by the Mine after completion of the required Risk Assessment.
- All products must conform to local and international standards before it is sold for use
- DetNet complies to ISO 9001, SANS 551:2009, CEN/TS 13763-27 which is acceptable to countries we operate in; in countries not subscribing to the above marks, we advise users to engage with DetNet to ensure that all equipment comply to local regulations.

2.1.1. BlastWeb Network Security

DetNet considers cyber security as part of the safety philosophy to ensure no harm to any person or equipment as a result of malicious intent.

- No additional security other than the normal Windows security (Passwords and Firewall) is currently required for the system as the BlastWeb system is installed on its own dedicated network with no other equipment connected.

2.2. User Safety

Safety is ensured when the user supplements the product's in-built safety systems through adequate training in the safe use of the product:

- Induction training
- Refresher training

DetNet continuously upgrades software to make our products more user friendly and to ensure that users stay abreast on latest developments, it is important that users get trained on the relevant changes before their equipment is updated.

2.3. Transportation, Storage and Handling

BCU System equipment must be transported, stored, handled and used in conformity with all federal, state, provincial and local laws and regulations. Control equipment and accessories should be handled with due care and not dropped, mishandled, subjected to excessive vibration or exposed to any chemical agents. Connectors should be kept clean and the equipment must be kept in a safe environment to avoid misappropriation or misuse.

2.4. Maintenance Schedule

All equipment in the field will need to be returned to DetNet, or its repair centres, for service at the following intervals:

- Handheld Equipment (Tagger, etc.) – 18 Months.
- Other equipment (Excluding accessories) – 24 Months.

DetNet South Africa Copyright © 2019

2.5. Information in case of emergency

Refer to http://www.detnet.com/ for additional detail and documentation.

2.6. RF compliance - FCC (USA) and ICES (Canada)

2.6.1. Unauthorised Changes

DetNet South Africa has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

DetNet South Africa *n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature. Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.*

2.6.2. Radio Interference

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie 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, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

2.6.3. FCC Class A digital device notice

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 installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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.

2.6.4. Labelling Requirements for the Host device

The host device shall be properly labelled to identify the modules within the host device. The certification label of the module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labelled to display the FCC ID and IC of the module, preceded by the words "Contains transmitter module", or the word "Contains", or similar wording expressing the same meaning, as follows:
Contains FCC ID: 2ARNH-0743337A

L'appareil hôte doit être étiqueté comme il faut pour permettre l'identification des modules qui s'y trouvent. L'étiquette de certification du module donné doit être posée sur l'appareil hôte à un endroit bien en vue en tout temps. En l'absence d'étiquette, l'appareil hôte doit porter une étiquette donnant le FCC ID et le IC du module, précédé des mots « Contient un module d'émission », du mot « Contient » ou d'une formulation similaire exprimant le même sens, comme suit :
Contains IC: 24476-0743337A

DetNet South Africa Copyright © 2019

2.6.5. CAN ICES-3 (A) / NMB-3 (A)

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de classe A est conforme à la norme canadienne ICES-003.

2.7. Warning, Caution, and Note Statements

WARNING, ***CAUTION***, and ***NOTE*** statements are used throughout this manual to emphasise important and critical information. Observe these statements to ensure safety and to prevent product damage. The statements are *defined as follows:*

WARNING	**A WARNING MEANS THAT INJURY OR DEATH IS POSSIBLE IF THE INSTRUCTIONS ARE NOT OBEYED.**

Warnings draw special attention to anything that could injure or kill the reader/user. *Warnings* are generally placed before the step in the procedure they relate to. Warning messages are repeated wherever they apply.

CAUTION	**A CAUTION MEANS THAT DAMAGE TO EQUIPMENT IS POSSIBLE.**

Cautions draw special attention to anything that could damage equipment or cause the loss of data and will normally describe what could happen if the caution is ignored. *Cautions* are generally placed before the step in the procedure they relate to.

NOTE	**Notes are added to provide additional information.**

Notes are used to emphasise important information by visually distinguishing this from the rest of the text. Notes can contain any type of information except safety information, which is always placed in cautions or warnings.

Refer to http://www.detnet.com/ for additional detail and documentation.

DetNet South Africa Copyright © 2019

2.8. DISCLAIMER

This document forms part of the User Manual for the BlastWeb® System and is considered to be confidential. This document contains restricted information for company and channel partners' application only.
Should any of the restricted information contained in this document be disclosed to any third party either intentionally or unintentionally, DetNet South Africa will not be held responsible, accountable or liable for any resulting event and or issue.

CAUTION	**THE FOLLOWING SHOULD BE BROUGHT TO THE ATTENTION OF THE PERSON RESPONSIBLE FOR MAINTAINING THE BLASTWEB AND BCU NETWORK FOR CENTRALISED BLASTING:** • **ATTEMPTS WILL BE MADE TO RETRIEVE SETTINGS LIKE IP ADDRESS, MAC ADDRESS, BCU ID AND BCU MODE.** • **IN THE EVENT THAT RECOVERY OF IP, MAC AND ID FAILS, THE BCU WILL MOST LIKELY NOT BE ABLE TO COMMUNICATE WITH THE SURFACE CONTROLLER, IN WHICH CASE THE BCU WILL REQUIRE ITS SETTINGS TO BE PHYSICALLY RESET BY USER AT THE BCU, OR REQUIRE A BOOTLOAD VIA USB.** • **SETTINGS SUCH AS TIMING TEMPLATES COULD BE LOST, AND IS A GIVEN WHEN UPGRADING FROM A VERSION OLDER THAN 31934 DUE TO TEMPLATE MODIFICATIONS REQUIRED FOR BIGGER TEMPLATES. (NOT APPLICABLE TO 4G MODE)** • **IN ORDER TO ENSURE OPTIMAL PERFORMANCE, FIRST LOAD THE LATEST VERSION OF BLASTWEB.** • **IN ORDER TO RETAIN THE CURRENT BCU LAYOUT AND SETTINGS, RECORD THE IP ADDRESS, MAC ADDRESS, BOX ID AND ANY CUSTOMIZED TIMING TEMPLATES OF EACH BCU BEFORE UPGRADING THE BOOTLOADER OR THE FIRMWARE.** • **IF APPLICABLE, FIRST LOAD THE NEW BOOTLOADER AND DIRECTLY AFTERWARDS LOAD THE NEW FIRMWARE.** • **RETURN THE BCU SETUP SETTINGS FROM RECORDING MADE PRIOR TO UPGRADING.** • **IT IS ALWAYS THE RESPONSIBILITY OF THE USER TO ENSURE THAT SETTINGS ARE KEPT ON RECORD AND CAN BE MANUALLY RELOADED AFTER THE UPGRADE IN THE EVENT OF SETTINGS CORRUPTION.** • **DETNET SA CANNOT BE HELD ACCOUNTABLE FOR ANY LOSS OF SETTINGS OR LOSS OF OPERATIONS DUE TO SETTINGS CORRUPTION.**

2.9. Pre-requisites

- 1 x Memory stick loaded with the latest BlastWeb® Software
- PostgreSQL 9.3 shall be installed on the PC
- UTM-00308 and UTM-00314 for reference to installing and configuring BlastWeb on the Surface Blast Controller

DetNet South Africa Copyright © 2019

3 SAVING LOGS

This function enables the user to save the log files onto a Flash Memory Stick.

1. Display Main Menu
   - Press DEBUG soft key to select Debug Menu
2. Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
3. Debug Screen
   - Press **1** on the keypad to select **LOGS** in either **DriftShot** or **4G mode**s or Press **X** on the keypad to select **LOGS** in 4G mode

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

NOTE

Pre-requisites:

- **Flash Drive formatted in FAT32, scanned and cleared of any viruses prior to use.**
- **BCU will recognize Flash Drives up to 4GB only**
- **Only the BlastWeb Software data is allowed to be saved on this Flash Drive.**

4. Connect USB Flash Drive using a micro USB convertor cable or adapter.
   - Press **LOGS** Soft Key.

LOGS MENU

Insert USB flash drive and
Press LOGS to export to flash.

Press CLR LOGS twice to clear
Logs on BCU
WARNING: Logs will be deleted!

Log Parser will be required to
Interpret logs.

LOGS **CLR LOGS** **EXIT**

DetNet South Africa Copyright © 2019

5. BCU will detect USB Flash Drive and write logs to USB Flash Drive
   - BCU will export logs to flash drive and label it as "BCU_<ID>_<DATE>_<TIME>.log"

CONNECTING TO THE STORAGE DEVICE

...

EXIT

   - Progress 100% complete, remove USB Flash Drive.

CONNECTING TO STORAGE DEVICE
FOUND STORAGE DEVICE
WRITING TO STORAGE DEVICE

PROGRESS : 100% COMPLETE

DONE – FILE WRITE COMPLETE
REMOVE FLASH DRIVE

EXIT

DetNet South Africa Copyright © 2019

4 CLEAR LOGS

This function enables the user to clear all logs from the unit

CAUTION	**CLEARING LOGS WILL MAKE FAULT FINDING AND DEBUGGING OF PREVIOUS INCIDENTS IMPOSSIBLE OR VERY DIFFICULT!**

1. Display Main Menu
   - Press DEBUG soft key to select Debug Menu
   -
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **1** on the keypad to select **LOGS** in either **DriftShot** or **4G mode**s

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

4. Debug Screen
   - Press **CLR LOGS** soft key twice to select Clear Logs option

DEBUG MENU

Insert USB flash drive and
Press LOGS to export to flash

Press CLR LOGS twice to clear
Logs on BCU
WARNING : Logs will be deleted

Log Parser will be required to
Interpret logs.

LOGS CLR LOGS EXIT

DetNet South Africa Copyright © 2019

5 CALIBRATION

This function enables the user to calibrate all leakage and current levels across the six channels. Calibration is initially set in the factory and is used to compensate for the device-specific measurement drift due to changing environmental conditions and component tolerance. Should calibration not be possible, the BCU UI should be sent back to the manufacturer for servicing, to ensure correct leakage and current measurements.

1. Display Main Menu
   - Press **DEBUG** soft key to select DEBUG
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **2** on the numerical keypad in both **DriftShot** and **4G mode**s to select **IO CALIBRATION**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

4. Screen will display message
   - Press any key to start calibration

IO CALIBRATION

MAKE SURE THAT
NOTHING IS CONNECTED TO
ANY OF THE IO
CHANNELS

PRESS ANY KEY TO START

EXIT

5. Leakage Calibration
   - Leakage values will be displayed

LEAKAGE CALIBRATION

0.13mA	0.15mA
0.11mA	0.11mA
0.13mA	0.12mA

EXIT

DetNet South Africa Copyright © 2019

6. Should the leakage be too high, resulting in a failure to calibrate, a warning message will be displayed.

LEAKAGE CALIBRATION

FAIL! VALUE TOO HIGH

PRESS ANY KEY TO EXIT

7. Should the leakage be within limits, a confirmation message will be displayed.

LEAKAGE CALIBRATION

LEAKAGE CALIBRATION OK

8. Current Calibration
   - Line Current values will be displayed

CURRENT CALIBRATION

LEAKAGE CALIBRATION OK

0.15 mA	**0.17 mA**
0.13 mA	**0.14 mA**
0.15 mA	**0.15 mA**

EXIT

9. Should the current calibration be too high, resulting in a failure to calibrate, a warning message will be displayed.

CURRENT CALIBRATION

FAIL! VALUE TOO HIGH

PRESS ANY KEY TO EXIT

10. Should the leakage be within limits, a confirmation message will be displayed.

CURRENT CALIBRATION

LEAKAGE CALIBRATION OK
CURRENT CALIBRATION OK

TEST DONE – ALL OK
PRESS ANY KEY TO EXIT

DetNet South Africa Copyright © 2019

6 DATE AND TIME

NOTE

Ensure that the time zone is set correctly. On V2 hardware the Date and Time settings must be checked after every power cycle! Hardware revision can be determined by selecting Option 9: System Settings, and observing the version displayed there.

This function enables the user to set the date and the time on the BCU. Date and time saved in the logs will be based on the date and time settings as saved in the BCU. Date and time will automatically be updated when BCU establishes connection with the Surface Blast Controller.

1. Display Main Menu
   - Press DEBUG soft key to select DEBUG
2. Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
3. Debug Screen
   - Press 3 on the keypad in both **DriftShot** and **4G mode**s to select SET DATE AND TIME

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

- Press SET soft key to select Set Date and Time option

SET DATE AND TIME

DATE : 26 – 09 - 2017
TIME : 11 : 12 : 13

SET EXIT

4. Set Time Screen

Enter **GMT** time

- Using the numerical key pad, enter day of the month
- Using the numerical key pad, enter month
- Using the numerical key pad, enter year
- Using the numerical key pad, enter hour
- Using the numerical key pad, enter minutes

SET DATE AND TIME

DATE : 01 – 02 - 2017
TIME : 12 : 00 : 00

ENTER MINUTES

DATE : 26 – 09 – 2017

TIME : 12 : ?

SET EXIT

DetNet South Africa Copyright © 2019

5. The time zone setting allows for a value of GMT-12 to GMT+12 in one hour increments.
   - Using the UP and Down soft keys, select the correct time zone
   - Press SET and then ENTER to save changes
   - Press EXIT soft key to exit

SET DATE AND TIME

DATE : 26 – 09 - 2017
TIME : 12 : 00 : 00

Use the UP and DOWN keys to enter the time zone

Press ENTER key to save

TIME ZONE IS : 02

SET UP DOWN EXIT

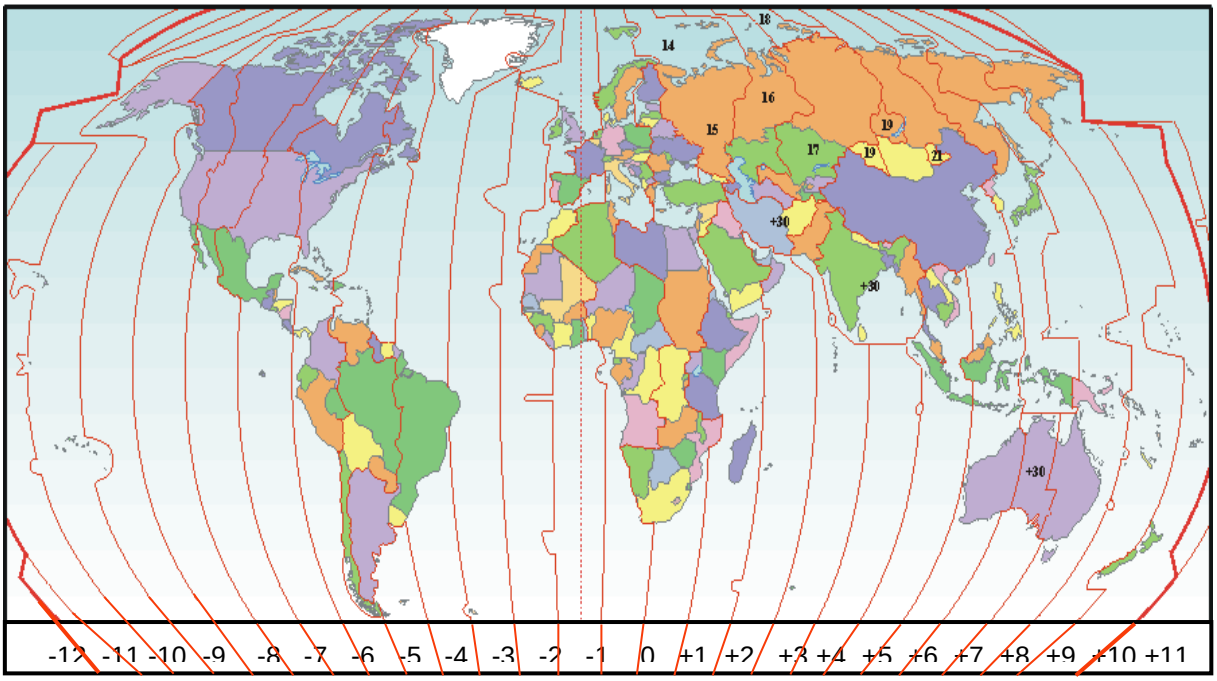
6. Save
   - Press ENTER to save changes
   - Press SET soft key return to set time option.
   - Press EXIT soft key to exit

SET DATE AND TIME

DATE : 29 – 09 - 20172
TIME : 12 : 12 : 13

TIME SAVED SUCCESSFULLY

SET EXIT



DetNet South Africa Copyright © 2019

7 SYSTEM DIAGNOSTICS

This function enables the user to check internal voltages used during fault finding.

1. Display Main Menu
   - Press DEBUG soft key to select DEBUG
2. Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
3. Debug Screen
   - Press **4** on the keypad on both **DriftShot** and **4G mode**s to select **SYSTEM DIAGNOSTICS**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

Chrg DC input	Input charger voltage. Will be between 16V and 19V when the BCU is powered off mains
Chrg DC output	Output voltage of charger. 11.8V to 14.1V, when mains is present.
12V rail	Battery voltage 11.7V to 14.1V
10V6 rail	System voltage 10.5V to 10.8V
5V rail	5V power supply, Used to power USB 4.8V to 5.2V
3V3 rail	3.3V used to power the microcontrollers 3.1V to 3.5V
3V3 standby	Only relevant to V2 hardware. Displays the real-time clock backup power to maintain time and date settings.
Upcon V out	Blast supply voltage. Idle, value must be less than 10V. When charging detonators, value must be 28V to 31V
Maestro Mode	Mode of the main processor
PL Mode	Mode of Backup processor
Maestro Charge	The remaining time before the main processor will attempt to send the FIRE command
PL Charge	The duration that high voltage is present during blasting

DIAGNOSTICS

Chrg DC input :	0.00	V
Chrg DC output :	0.00	V
12V rail :	12.52	V
10V6 rail :	10.67	V
5V rail :	5.20	V
3V3 rail :	3.29	V
3V3 standby :	3.23 N/A	V
Upcon V out :	6.68	V
Maestro Mode :	0	
PL Mode	1	
Maestro Charge	-1	mS
PL Charge	0	S

EXIT

DetNet South Africa Copyright © 2019

8 CHANGE DEBUG PASSWORD

The BCU is protected from unauthorised use by assigning a device password. The specific password is supplied by the manufacturer.

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **5** on the keypad in both **DriftShot** and **4G modes** to select **CHANGE PASSWORD**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

4. Password
   - Enter old password using the numerical key pad,
   - Press **ENTER** to continue

CHANGE DEBUG PASSWORD

ENTER OLD PASSWORD

PRESS ESC OR EXIT TO RETURN

EXIT

   - Enter new password using the numerical key pad,
   - Press **ENTER** to save new password

CHANGE DEBUG PASSWORD

ENTER NEW PASSWORD

PRESS ESC OR EXIT TO RETURN

EXIT

   - Enter the same new password using the numerical keypad,
   - Press ENTER to save new password
   - Press **EXIT** to return to Debug Menu

CHANGE DEBUG PASSWORD

AGAIN NEW PASSWORD

PRESS ESC OR EXIT TO RETURN

EXIT

NOTE

In the event of a user forgetting the password, the password can be reset to the default password by pressing the RESET soft key in the screen where the DEBUG MENU password is expected. This will require the user to contact DetNet Product Support in order to obtain an access code based on the number generated by the BCU. After entering the correct access code, the password will be reset.

DetNet South Africa Copyright © 2019

9 ASSIGN TEMPLATE

This option allows the user to set which timing options the end user may customise using the pre-set templates.

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **6** on the keypad to select **ASSIGN TEMPLATE**

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

Assign Templates

4. Pressing **1** on the keypad will toggle permission settings to allow the users to change selected fields and selecting or setting timing templates as follows:
   - When NONE is selected, all templates may only be selected and changed by the Administrator.
   - When PERIOD DELAY is selected, the Users can assign the PERIOD templates to channels and Admin assigns the INTRA-DET delay templates to channels.
   - When INTRA-DET is selected, the Users can assign INTRA-DET templates to channels and Admin assigns the PERIOD delay templates to channels.
   - When ALL is selected, the Users can assign both the PERIOD delay templates and the INTRA-DET delay templates to channels.

ASSIGN TEMPLATES

1. USER SELECT : NONE
2. EACH FACE OWN TEMPLATE : YES
3. EDIT CHANNEL OFFSETS

Press 1 to toggle USER SETUP
Press 2 to toggle FACE SETUP

Press NEXT to select templates
To be used…

PRESS ESC TO RETURN

NEXT

NOTE

The delays in the templates may only be modified by the administrator in all cases.

- Pressing **2** on the keypad will toggle (YES/NO) to select when each channel is assigned its own individual template or not.
- Press **NEXT** Soft Key to assign templates to channels

DetNet South Africa Copyright © 2019

9.1. Assign Period Templates

This option allows the user to assign a Period timing template to each channel.

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **6** on the keypad to select **ASSIGN TEMPLATE**

```
DEBUG MENU
1  LOGS
2  IO CALIBRATION
3  SET DATE AND TIME
4  SYSTEM DIAGNOSTICS
5  CHANGE DEBUG PASSWORD
6  ASSIGN TEMPLATES
7  EDIT TEMPLATES
8  CHANGE BCU MODE
9  SYSTEM SETTINGS
0  SCAN SETUP
                    EXIT
```

4. Assign Templates
   - Press **NEXT** Soft Key to assign templates to channels

```
ASSIGN TEMPLATES
1.  USER SELECT : NONE
2.  EACH FACE OWN TEMPLATE : YES
3.  EDIT CHANNEL OFFSETS

Press 1 to toggle USER SETUP
Press 2 to toggle FACE SETUP

Press NEXT to select templates
To be used…

PRESS ESC TO RETURN
                    NEXT
```

9.1.1. Period Delay Template

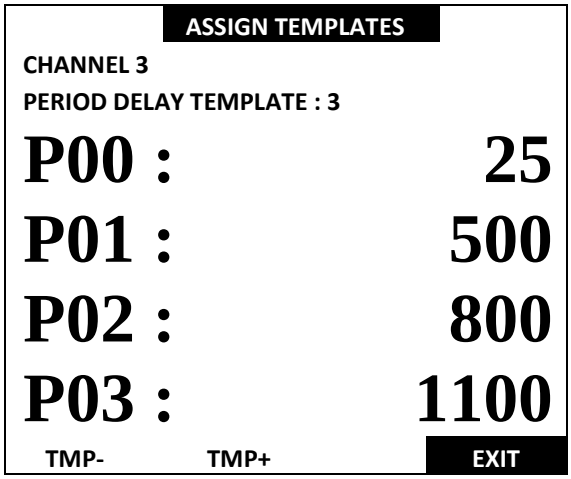
- Press **CH-** or **CH+** soft key to select the desired channel
- Press **EDIT** to change Period template number (0-3) assigned to the specific channel.

```
ASSIGN TEMPLATES
CHANNEL 3
PERIOD DELAY TEMPLATE : 0
P00 :                25
P01 :               500
P02 :               800
P03 :              1100
CH-      CH+      DET      EDIT
```


DetNet South Africa Copyright © 2019

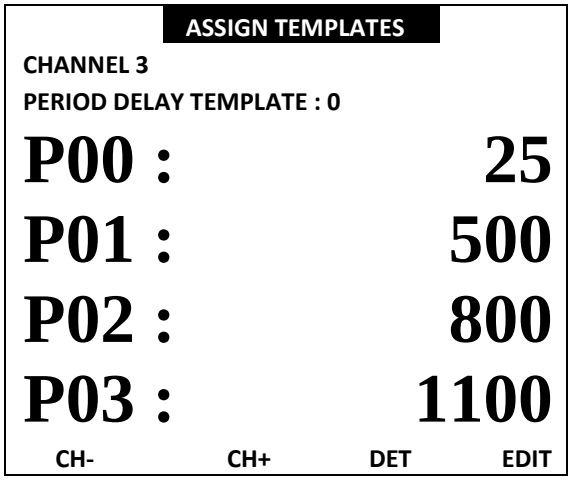
9.1.2. Assign Period Delay Template

- Press **TMP-** or **TMP+** soft key to scroll through templates
- Press 0 – 9s to select templates by number
- Use the ◀ ▶ keys to page through templates
- Use the ▲ ▼ keys to scroll line by line
- Press **EXIT** to save the Period template number



Assign Templates screen will be displayed

- Press CH- or CH+ soft key to select channels
- Press EDIT to change template number to be assigned
- Press DET to select the INTRA-DET template see section below



DetNet South Africa Copyright © 2019

9.2. Assign Intra-det Templates

This option allows the user to assign the Intra-det template to each channel.

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **6** on the keypad to select **ASSIGN TEMPLATE**

```
DEBUG MENU
1  LOGS
2  IO CALIBRATION
3  SET DATE AND TIME
4  SYSTEM DIAGNOSTICS
5  CHANGE DEBUG PASSWORD
6  ASSIGN TEMPLATES
7  EDIT TEMPLATES
8  CHANGE BCU MODE
9  SYSTEM SETTINGS
0  SCAN SETUP
                    EXIT
```

4. Assign Templates
   - Press **NEXT** Soft Key to assign templates to channels

```
ASSIGN TEMPLATES
1.  USER SELECT : NONE
2.  EACH FACE OWN TEMPLATE : YES
3.  EDIT CHANNEL OFFSETS

Press 1 to toggle USER SETUP
Press 2 to toggle FACE SETUP

Press NEXT to select templates
To be used…

PRESS ESC TO RETURN
                    NEXT
```

   - Press DET Soft Key to navigate to the menus used to assign the Intra-det template

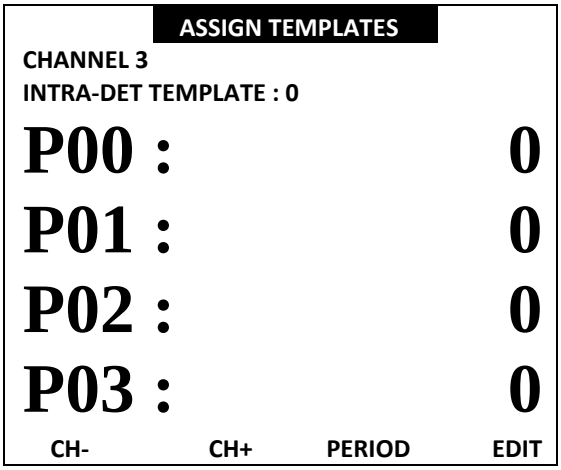
```
ASSIGN TEMPLATES
CHANNEL 3
PERIOD DELAY TEMPLATE : 0
P00 :                25
P01 :               500
P02 :               800
P03 :              1100
CH-      CH+      DET      EDIT
```


DetNet South Africa Copyright © 2019

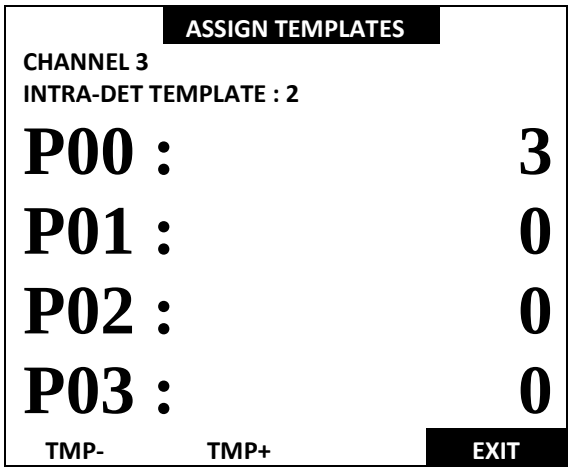
NOTE

DET Soft button SF3 toggles DET to PERIOD and vice versa.

- Press **PERIOD** to return to Period template assignment.
- Press **CH-** or **CH+** soft key to select channels
- Press **EDIT** to change the assigned Intra-det template



5. Change Intra-det Template assigned
   - Press **TMP-** or **TMP+** soft key to scroll through templates
   - Press 0 – 9 to select template by number
   - Use the keys to page through templates
   - Use the keys to scroll line by line
   - Press **EXIT** to save Intra-det template

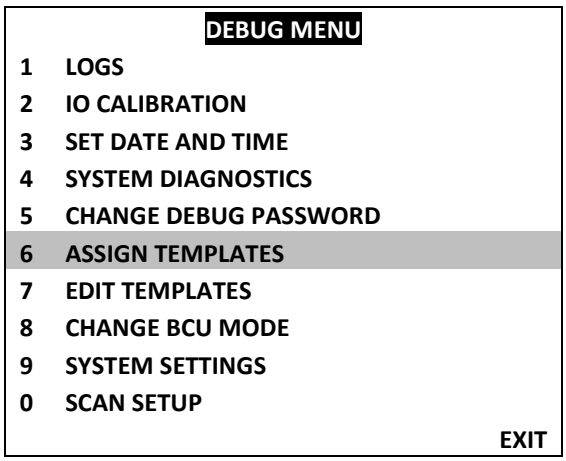


DetNet South Africa Copyright © 2019

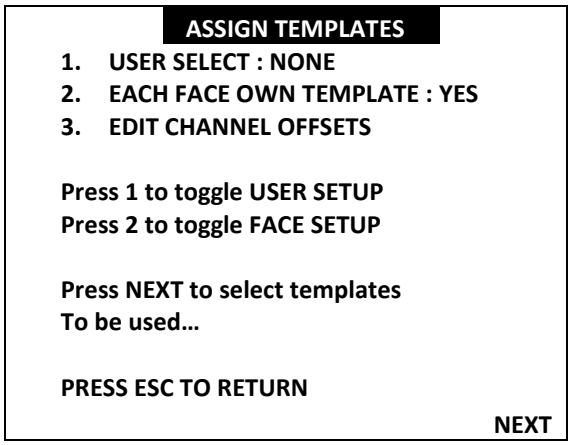
9.3. Edit Channel Offsets

This option allows the user to edit the offset on selected channels.
Channel offset times are NOT APPLICABLE to SmartShot Channels – Time via ViewShot or manipulate relevant times during tagging.

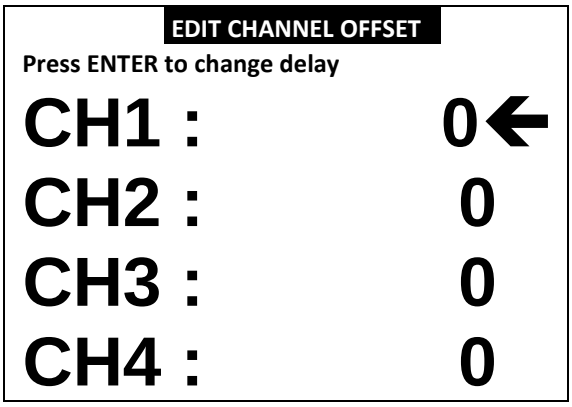
1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG** menu
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **6** on the keypad to select **ASSIGN TEMPLATE**



4. Assign Templates
   - Press **3** on the keypad to select **Edit channel offsets**



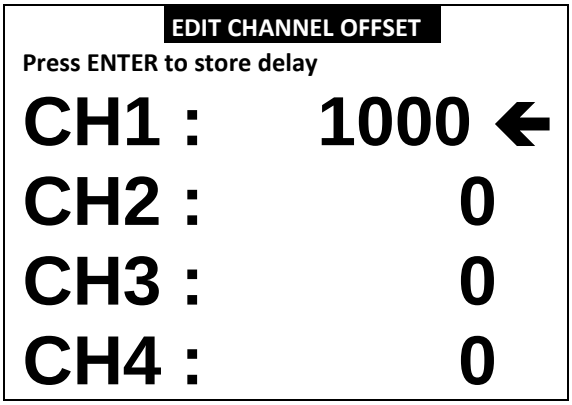
5. Edit Channel Offset
   - Select channel to be edited (Indicated by an Arrow on right of channel number).
   - Press Enter key to change value



DetNet South Africa Copyright © 2019

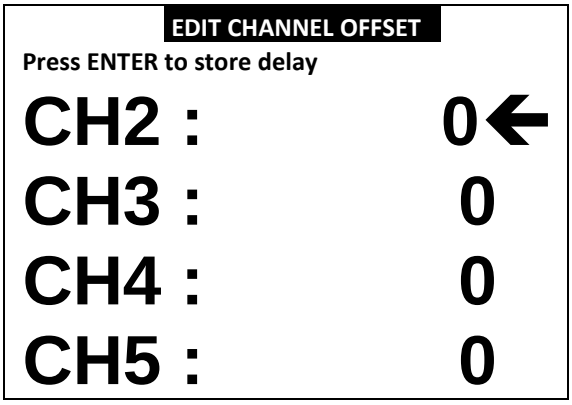
6. Edit Channel Offset

- Use numerical keypad to enter required value
- Press Enter key to store value

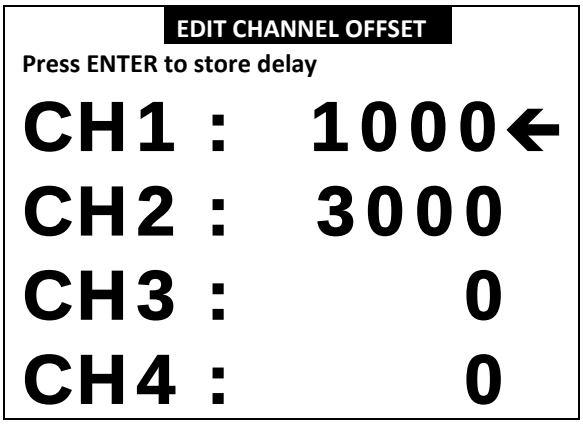


NOTE	**Maximum value is 20 000 ms (20 second delay).**

- Line will advance to next channel to be edited (Indicated by arrow on right now pointing at Channel 2) will be displayed.



- Press the UP arrow to view the changed values



DetNet South Africa Copyright © 2019

7. From the HOME SCREEN, press the numerical key corresponding to the IO Channel Number to view the required channel.
   - Offset is displayed (Channel 2 with a 3000ms offset in this example)

IO – CHANNEL STATUS SCREEN

Channel 2	***DR**	**OFFSET**	**3000ms**
Design Dets		**93**	
Template:		**PER = 0**	**DET = 0**
Det Count:		**93**	
Current det:		**5**	
Error:		**0**	
Leakage / Current:		**0.07 /**	**0.13 mA**
Channel Voltage:		**8.66 V**	
T.Voltage / Count:		**0.00 V /**	**-**
Mode:		**TESTING**	
LIST	**TIMES**		**EXIT**

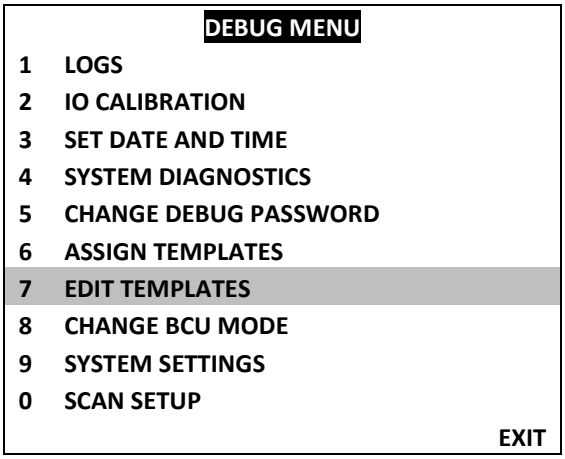
DetNet South Africa Copyright © 2019

10 EDIT PERIOD TEMPLATE TIMES

This option allows the administrator to edit the times in the period timing templates used by the end user

NOTE	**The Edit Period Template Times is an ADMIN function only.**

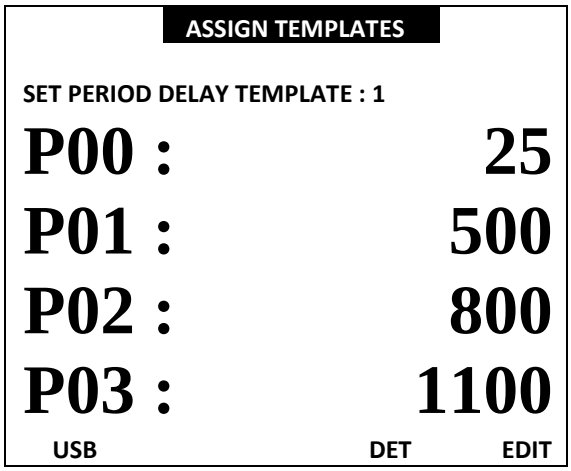
1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **7** on the keypad to select **EDIT TEMPLATES**



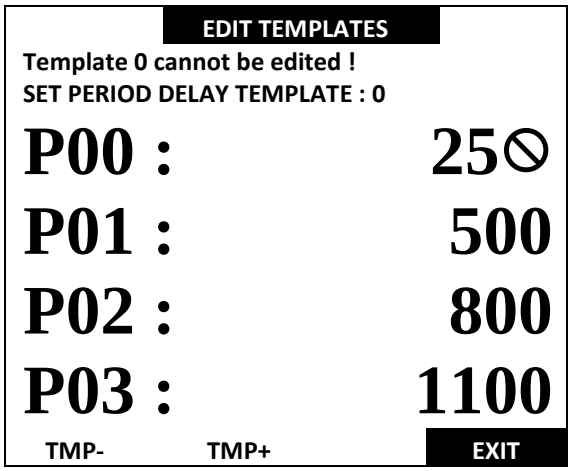
4. Template

Eleven template options are available; 0, 1-10

- Use numerical keypad to enter required template number
- Press **EDIT** soft key to edit template



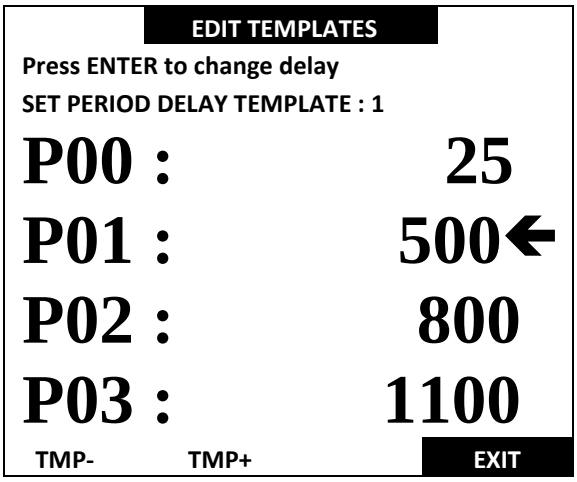
- Template 0 is fixed and cannot be edited.
- A prohibit symbol (⃠) is displayed next to Template 0 indicating that it may not be edited.
- This symbol will not be displayed on Templates 1 to 10



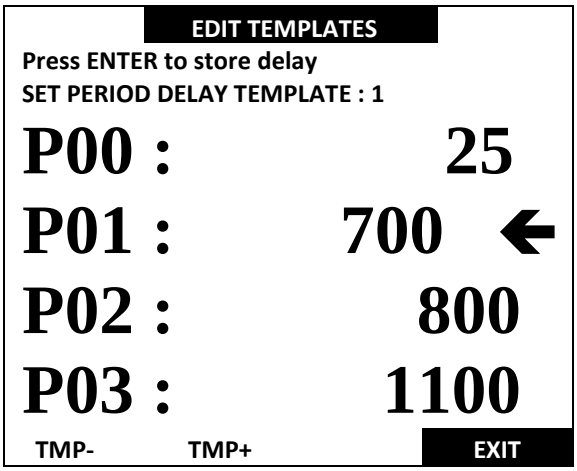
DetNet South Africa Copyright © 2019

Template

- Use the ◀ ▶ keys to page through templates
- Press **TMP-** or **TMP+** soft key to select template
- Use the ▲ ▼ keys to scroll line by line
- The Left Arrow '🡐' denotes selected option
- Press **ENTER** to select - This will clear the field
- ESC will return the deleted value at this stage



- Use the numerical keys to enter required delay
- Values between 0 and 20000 are allowed (0-20s)
- Press **ENTER** to accept the new value
- Press **EXIT** after pressing ENTER to stop editing current template.



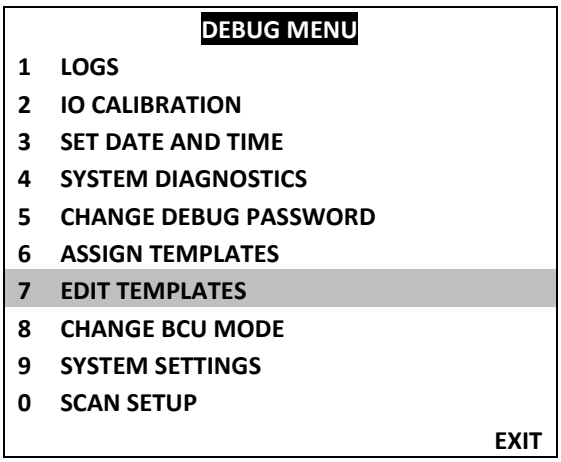
NOTE	**DriftShot Starter absolute delays can be edited by selecting the STARTER (STR) entry at the end of the list.**

DetNet South Africa Copyright © 2019

10.1. Edit Intra-det Template Times

This option allows the user to edit the times in the INTRA-DET timing templates used by the end user

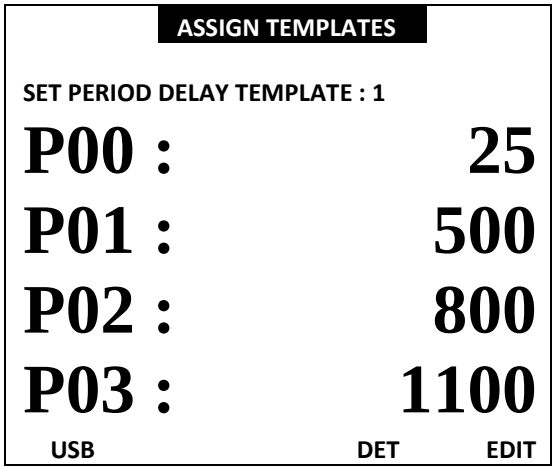
1. Display Main Menu
   - Press DEBUG soft key to select DEBUG menu
   - Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
   - Debug Screen
   - Press **7** on the keypad to select **EDIT TEMPLATES**



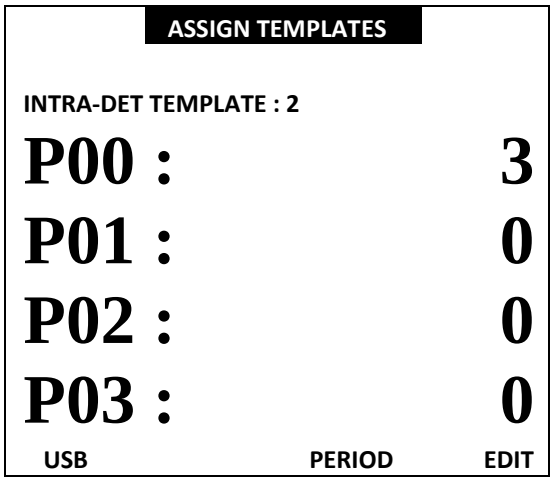
2. Assign Templates

There are 11 template options available; 0, 1-10

- Using the numerical keypad, enter required template number
- Press DET to view Intra-det templates

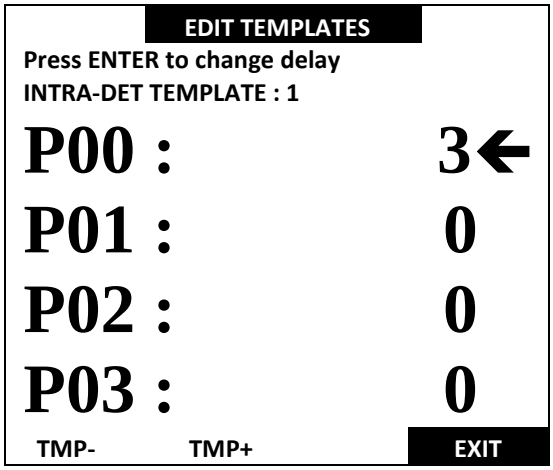


- Press EDIT soft key to edit template
- Template 0 is fixed and cannot be edited. A prohibit symbol (⃠) will be displayed next to Template 0 if selected, indicating that it may not be edited.
- This symbol will not be displayed on Templates 1 to 10.

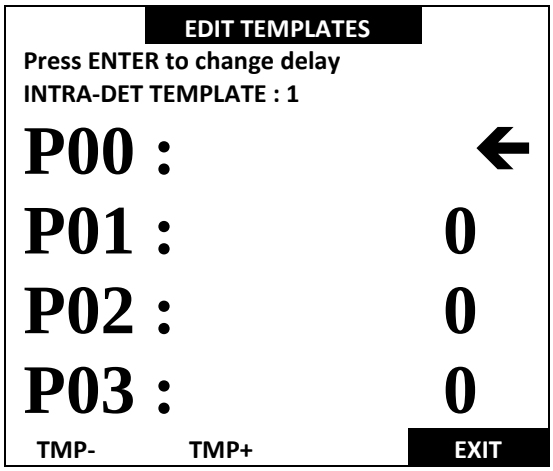


DetNet South Africa Copyright © 2019

3. Edit Templates
   - Press **TMP-** or **TMP+** soft key to select template
   - Use the ◀ ▶ keys to page through templates
   - Use the ▲ ▼ keys to scroll line by line
   - The Left Arrow '🡐' denotes selected option
   - Press **ENTER** to select - this will clear the field
   - ESC will return the deleted value at this stage



   - Use the numerical keys to enter required delay
   - Press ENTER to accept the new value
   - Press EXIT after pressing ENTER to stop editing current template.



CAUTION	**MAXIMUM OF 20,000MS CAN BE USED FOR INTRA-DETONATOR DELAY WITHIN A PERIOD. STARTER DET INTRA-DET DELAYS APPEAR AT THE END OF THE TEMPLATE.**

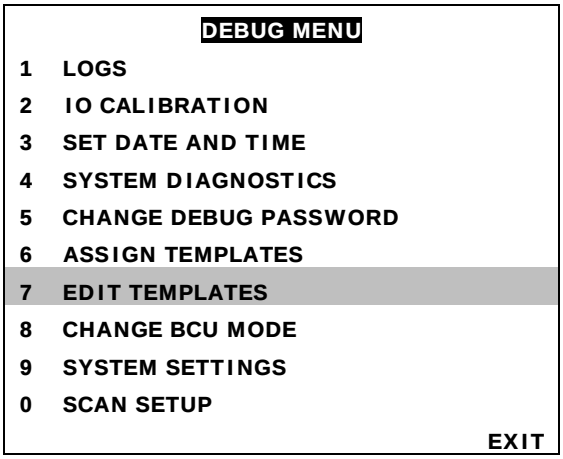
DetNet South Africa Copyright © 2019

11 IMPORT, EXPORT AND RESET TEMPLATES

Once templates are set up on a BCU, they may be copied onto a flash-drive and transferred to other BCUs. Template sets, both Period and Intra-det template sets, may be copied from one BCU to another using a Flash-drive.

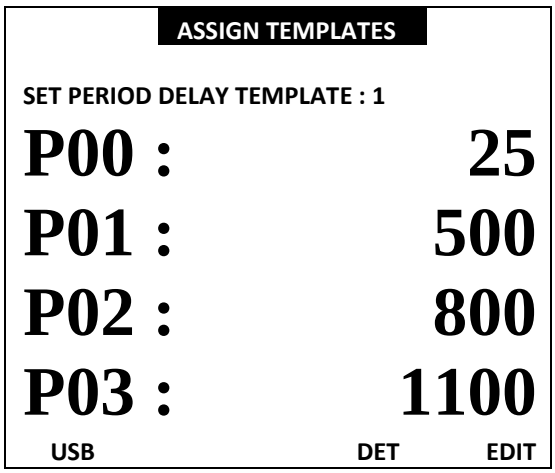
11.1. Export Templates to USB Flash Drive

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **7** on the keypad to select **EDIT TEMPLATES**

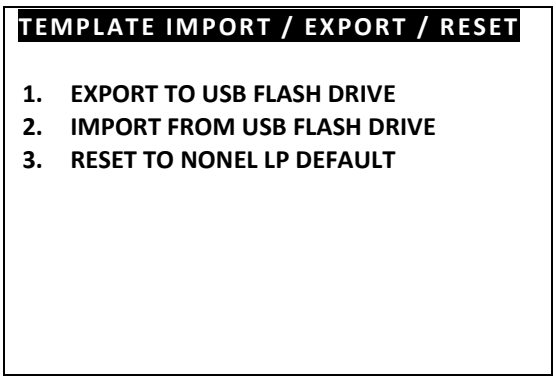


Template Import / Export / Reset

- Press **USB** soft key to select **TEMPLATE IMPORT / EXPORT / RESET**



- Insert a USB Flash Drive into the USB connector on the BCU.
- Press **1** on the keypad to select Export To USB Flash Drive



DetNet South Africa Copyright © 2019

FILE(s) ON THE FLASH DRIVE WILL BE OVERWRITTEN.

- Press **YES** soft key to transfer the BCU template information onto the flash drive

```
ATTENTION !                EXPORT

ALL THE BCU TEMPLATES WILL
BE EXPORTED TO FLASH DRIVE

THE FILE ON THE FLASH DRIVE
WILL BE OVERWRITTEN

PRESS YES TO EXPORT

YES                          NO
```

- BCU connects to the flash drive

```
CONNECTING TO THE STORAGE DEVICE

EXIT
```

- BCU connects to the flash drive and writes Template information onto the flash drive
- Template information copied onto flash drive
- Remove the flash drive from the BCU

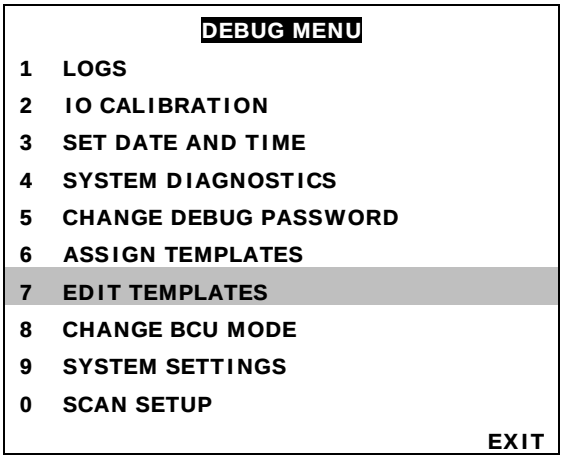
```
CONNECTING TO THE STORAGE DEVICE
FOUND STORAGE DEVICE
WRITING TO STORAGE DEVICE

TEMPLATES EXPORTED TO FILE
DRIFTSHOT_TEMPLATE . DTemp

DONE  -  FILE WRITE COMPLETE
REMOVE FLASH DRIVE

EXIT
```

Wait for DONE - FILE WRITE COMPLETE to display before removing flash drive.

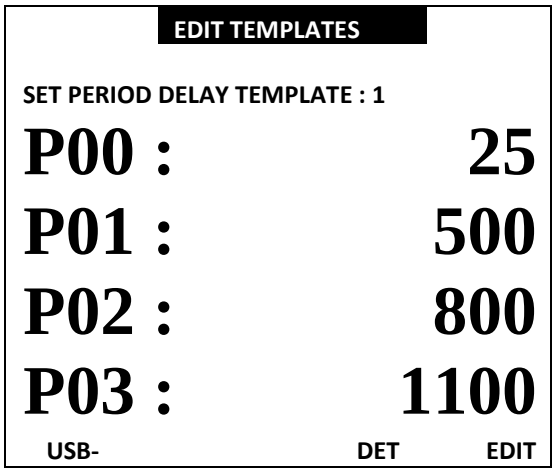
DetNet South Africa Copyright © 2019

11.2. Import Templates from USB Flash Drive

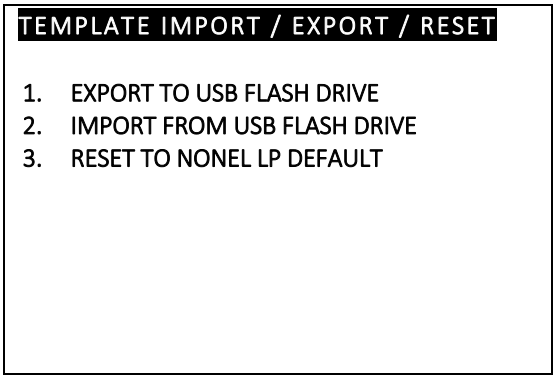
1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG** menu
2. Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
3. Debug Screen
   - Press **7** on the keypad to select **EDIT TEMPLATES**



4. Template Import / Export / Reset
   - Press **USB** soft key to select **TEMPLATE IMPORT / EXPORT / RESET**



   - Insert USB flash Drive into the USB connector on the BCU.
   - Press **2** on the keypad to select Import from USB Flash Drive



DetNet South Africa Copyright © 2019

ALL THE BCU TEMPLATES WILL BE REPLACED BY THE TEMPLATE FILE ON THE FLASH DRIVE

- Press **YES** soft key to import templates
- Press **NO** soft key to exit

```
ATTENTION !                EXPORT

ALL THE BCU TEMPLATES WILL
BE REPLACED BY THE TEMPLATE
FILE ON THE FLASH DRIVE !

PRESS YES TO IMPORT
PRESS NO TO EXIT

YES                                NO
```

- BCU connecting to flash drive

```
CONNECTING TO THE STORAGE DEVICE

EXIT
```

- BCU imports templates from flash drive to the BCU
- Remove the flash drive from the BCU

5. Templates imported to the BCU

```
CONNECTING TO THE STORAGE DEVICE
FOUND STORAGE DEVICE
SEARCHING FOR FILE ...

TEMPLATES IMPORTED TO BCU

DONE  -  FILE READ COMPLETE
REMOVE FLASH DRIVE

EXIT
```

Wait for DONE - FILE WRITE COMPLETE message to display before removing the flash drive.

DetNet South Africa Copyright © 2019

11.3. Reset Templates

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
3. Debug Screen
   - Press **7** on the keypad to select **EDIT TEMPLATES**

```
DEBUG MENU
1  LOGS
2  IO CALIBRATION
3  SET DATE AND TIME
4  SYSTEM DIAGNOSTICS
5  CHANGE DEBUG PASSWORD
6  ASSIGN TEMPLATES
7  EDIT TEMPLATES
8  CHANGE BCU MODE
9  SYSTEM SETTINGS
0  SCAN SETUP
                    EXIT
```

4. Template Import / Export / Reset
   - Press **USB** soft key to select **TEMPLATE IMPORT / EXPORT / RESET**

```
EDIT TEMPLATES

SET PERIOD DELAY TEMPLATE : 1
P00 :                  25
P01 :                 500
P02 :                 800
P03 :                1100
USB-              DET   EDIT
```

   - Press **3** on the keypad and follow the options to either reset to NONEL LP default or not.

```
TEMPLATE IMPORT / EXPORT / RESET

1.  EXPORT TO USB FLASH DRIVE
2.  IMPORT FROM USB FLASH DRIVE
3.  RESET TO NONEL LP DEFAULT
```


DetNet South Africa Copyright © 2019

12 CHANGE BCU MODE

This function enables the user to switch between product modes

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Display Debug Menu
   - Press **MODE** soft key to select **MODE**
3. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
4. Change BCU mode
   - Press **8 or 6** on the numerical keypad in either **DriftShot** or **4G mode**s to select **CHANGE BCU MODE**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP
EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS
EXIT

5. Change BCU mode
   - Use the numerical key pad to select mode

BCU MODE CHANGE

1 = QUICKSHOT
2 = SMARTSHOT
3 = DIGISHOT U/G
4 = DRIFTSHOT

CURRENT MODE IS DRIFTSHOT

PRESS ESC OR EXIT TO RETURN
EXIT

BCU MODE CHANGE

1 = QUICKSHOT
2 = BCU4G
3 = DIGISHOT U/G
4 = DRIFTSHOT

CURRENT MODE IS BCU4G

PRESS ESC OR EXIT TO RETURN
EXIT

DetNet South Africa Copyright © 2019

6. Restart Fixed BCU
   - Press the **REBOOT** SoftKey in order to reboot the BCU in an orderly fashion, preserving settings and preventing memory corruption

```
MODE CHANGED TO DRIFTSHOT  BCU4G

PRESS REBOOT IN ORDER TO
APPLY RELEVANT SETTING.

REBOOT                    EXIT
```

```
//////////////////////////////////////////////
//                                          //
//          BCU REBOOTING...                //
//                                          //
//        Keep ENTER pressed                //
//        in order to BOOTLOAD.             //
//                                          //
//////////////////////////////////////////////
```

12.1. BCU Interface Selection for V2 BCUs

This function enables the user to change an incorrectly set up V2 BCU. Upon upgrading an EDP-45_V2 BCU running the previous version of BCU software not supporting DriftShot, the user (maintenance personnel) will be required to set up the BCU in the correct interface mode by pressing indicated keys. Should an error occur, this process can be repeated through the DEBUG menu and a CHALLENGE response password screen.

When this version of software is first loaded on a V2 BCU, the software will require user input to set up the PORTABLE or FIXED user interface which requires a unique screen.

Bundled with the CHANGE BCU MODE debug option is a Soft Button that allows user to change the interface, if it was incorrectly set up at start-up. This option is hidden behind a CHALLENGE password.

Display Main Menu

- Press **DEBUG** soft key to select **DEBUG**
- Using the numerical key pad, enter four digit password
- Press **ENTER** to continue
  - Change BCU mode
- Press **8** on the numerical keypad to select **CHANGE BCU MODE**

```
DEBUG MENU
1  LOGS
2  IO CALIBRATION
3  SET DATE AND TIME
4  SYSTEM DIAGNOSTICS
5  CHANGE DEBUG PASSWORD
6  ASSIGN TEMPLATES
7  EDIT TEMPLATES
8  CHANGE BCU MODE
9  SYSTEM SETTINGS
0  SCAN SETUP
                          EXIT
```


DetNet South Africa Copyright © 2019

- Press **INTERFACE** Soft Button (SF1)
- Enter CHALLENGE response in order to effect the interface change.

BCU MODE CHANGE

1 = QUICKSHOT
2 = SMARTSHOT
3 = DIGISHOT U/G
4 = DRIFTSHOT

CURRENT MODE IS DRIFTSHOT

PRESS ESC OR EXIT TO RETURN
INTERFACE: FIXED BCU **EXIT**

CHANGE USER INTERFACE

IN ORDER TO CHANGE INTERFACE,
ENTER RESPONSE TO CODE 12345

YOUR RESPONSE :

PRESS ESC TO EXIT

DetNet South Africa Copyright © 2019

BCU Interface Selection

- Press ESC key to continue

```
BCU INTERFACE SELECTION

PLEASE PRESS ESC TO CONTINUE

                                EXIT
```

- Press DOT (.) key to continue

```
BCU INTERFACE SELECTION

NOW PRESS  DOT (●) TO CONTINUE

                                EXIT
```

- Should the incorrect button sequence be entered, the BCU will display a warning that a key mismatch was detected and the process will start over.

```
BCU INTERFACE SELECTION

MISMATCH.  PLEASE REPEAT

PRESS ESC TO CONTINUE

                                EXIT
```

- When the correct button sequence is detected, the BCU will be set up in the INTERFACE type / mode as defined by the key presses.

```
BCU INTERFACE SELECTION

INTERFACE CHANGED TO
FIXED BCU

PRESS REBOOT IN ORDER TO
APPLY RELEVANT SETTINGS

        REBOOT                  EXIT
```

- Press the REBOOT SoftKey in order to reboot the BCU in an orderly fashion, preserving settings and preventing memory corruption.

```
//////////////////////////////////////////////
//                                          //
//          BCU REBOOTING…                  //
//                                          //
//          Keep ENTER pressed              //
//          in order to BOOTLOAD.           //
//                                          //
//////////////////////////////////////////////
```


DetNet South Africa Copyright © 2019

13 BCU SETTINGS (OR INFORMATION)

This function enables the user to view the system settings

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **9** or **7** in either **DriftShot** or **4G mode**s to select **SYSTEM SETTINGS**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

4. System Settings Screen

NOTE

The following screen depicts an example of the System Settings – Version numbers as displayed may be different on the Users' display.

- LOCAL IP ADDRESS: 192.168.001.021
- LOCAL MAC ADDRESS: 123.200.021.123.200.021
- BOX ID: 600
- MAIN VER: 34481b
- HW VER: 3f0
- PL SW VER: 33753
- IO SW VER: 34504
- UI SW VER: 31147

SYSTEM SETTINGS

LOCAL I.P. ADDRESS :
192.168.001.021

LOCAL MAC ADDRESS:
123.200.021.123.200.021

BOX I.D.:
600

MAIN VER: 34481b HW VER: 3f0
PL SW VER: 33753
IO SW VER: 34504
UI SW VER: 31147

IP CHANGE MAC CHANGE BOX CHANGE EXIT

CAUTION

BOX ID RANGE SHOULD ALWAYS BE WITHIN 257 TO 65535, IN THE EVENT THAT THE ID IS OUT OF SPECIFIED RANGE, CONTACT THE SUPPLIER.

DetNet South Africa Copyright © 2019

13.1. Change IP Address

This function enables the user to change the unit's IP address

NOTE	**Never assign the same IP address to two devices.** **Always use an unassigned IP address to a device.**

1. Display Main Menu
   - Press DEBUG soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **9** or **7** in either **DriftShot** or **4G mode**s to select **SYSTEM SETTINGS**

DRIFTSHOT MODE

DEBUG MENU	
1	LOGS
2	IO CALIBRATION
3	SET DATE AND TIME
4	SYSTEM DIAGNOSTICS
5	CHANGE DEBUG PASSWORD
6	ASSIGN TEMPLATES
7	EDIT TEMPLATES
8	CHANGE BCU MODE
9	SYSTEM SETTINGS
0	SCAN SETUP
	EXIT

BCU 4G MODE

DEBUG MENU	
1	LOGS
2	IO CALIBRATION
3	SET DATE AND TIME
4	SYSTEM DIAGNOSTICS
5	CHANGE DEBUG PASSWORD
6	CHANGE BCU MODE
7	SYSTEM SETTINGS
	EXIT

4. System Settings Screen

NOTE	**The following screen depicts an example of the System Settings – Version numbers as displayed may be different on the Users' display.**

- Press **IP CHANGE** soft key to change the IP Address of the BCU

SYSTEM SETTINGS

LOCAL I.P. ADDRESS :
192.168.001.021

LOCAL MAC ADDRESS:
123.200.021.123.200.021

BOX I.D.:
600

MAIN VER: 34481b HW VER: 3f0
PL SW VER: 33753
IO SW VER: 34504
UI SW VER: 31147

IP CHANGE | MAC CHANGE | BOX CHANGE | EXIT

DetNet South Africa Copyright © 2019

5. Using the numerical key pad, enter new IP Address
   - Press **ACCEPT** to change IP Address
   - Press **EXIT** soft key to exit

CHANGE IP ADDRESS	
TYPE I.P. ADDRESS :	
192.168.001.213	
I.P. ADDRESS CHANGED	
ACCEPT	EXIT

DetNet South Africa Copyright © 2019

13.2. Change Mac Address

NOTE

The MAC address is set in the factory and should, in practice, never be changed.
Never assign the same MAC address to two devices.
Always use an unassigned MAC address to a device.

1. Display Main Menu
   - Press DEBUG soft key to select DEBUG
2. Password
   - Using the numerical key pad, enter four digit password
   - Press ENTER to continue
   - Press EXIT soft key to exit
3. Debug Screen
   - Press **9** or **7** in either **DriftShot** or **4G mode**s to select **SYSTEM SETTINGS**

DRIFTSHOT MODE

DEBUG MENU
1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP
EXIT

BCU 4G MODE

DEBUG MENU
1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS
EXIT

4. System Settings Screen

NOTE

The following screen depicts an example of the System Settings – Version numbers as displayed may be different on the Users' display.

- Press **MAC CHANGE** soft key to change the Mac Address of the BCU

SYSTEM SETTINGS
LOCAL I.P. ADDRESS :
192.168.001.021

LOCAL MAC ADDRESS:
123.200.021.123.200.021

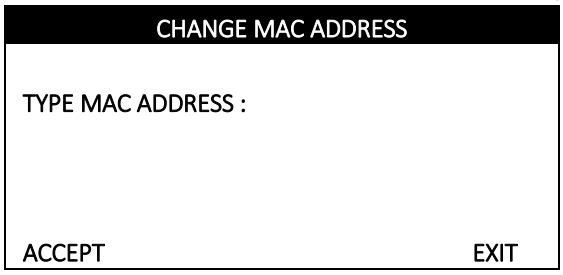
BOX I.D.:
600

MAIN VER: 34481b HW VER: 3f0
PL SW VER: 33753
IO SW VER: 34504
UI SW VER: 31147

IP CHANGE | MAC CHANGE | BOX CHANGE | EXIT

DetNet South Africa Copyright © 2019

- Using the numerical key pad, enter new MAC Address
- Press **ACCEPT** to change MAC Address
- Press **EXIT** to exit screen.



DetNet South Africa Copyright © 2019

13.3. Change Box ID

This Function enables the user to change the unit's ID

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **9** or **7** in either **DriftShot** or **4G mode**s to select **SYSTEM SETTINGS**

DRIFTSHOT MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP

EXIT

BCU 4G MODE

DEBUG MENU

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 CHANGE BCU MODE
7 SYSTEM SETTINGS

EXIT

4. System Settings Screen

NOTE

The following screen depicts an example of the System Settings – Version numbers as displayed may be different on the Users' display.

- Press **BOX CHANGE** soft key to change the BCUs ID

SYSTEM SETTINGS

LOCAL I.P. ADDRESS :
192.168.001.021

LOCAL MAC ADDRESS:
123.200.021.123.200.021

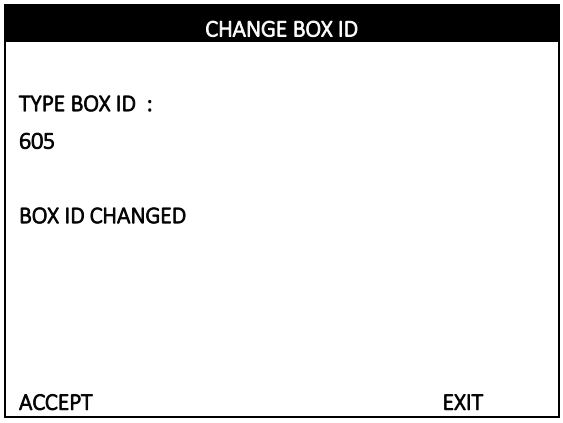
BOX I.D.:
600

MAIN VER: 34481b HW VER: 3f0
PL SW VER: 33753
IO SW VER: 34504
UI SW VER: 31147

IP CHANGE | MAC CHANGE | BOX CHANGE | EXIT

DetNet South Africa Copyright © 2019

5. Change Box ID Screen
   - Using the numerical key pad, enter new ID number for box
   - Press **ACCEPT** to change **BOX ID**
   - Press **EXIT** to exit screen.



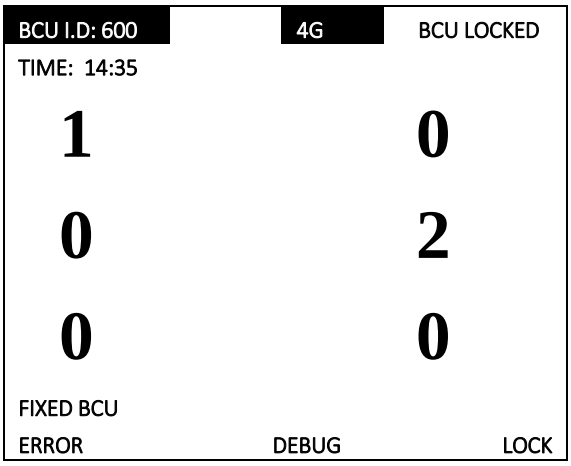
NOTE	**Box ID range should always be within 257 to 65535, in the event that the ID is out of specified range, contact the supplier.** **Never assign the same ID to two devices - Always use an unassigned ID to a device.**

DetNet South Africa Copyright © 2019

13.4. Surface Lock Override

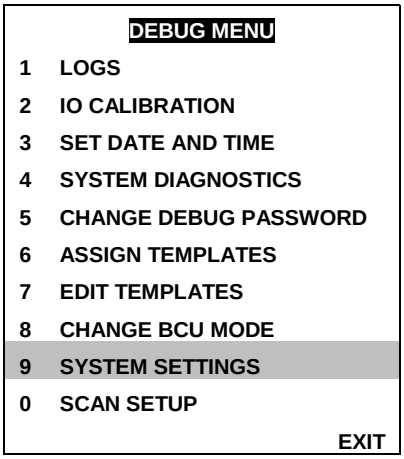
This function enables the user to unlock the BCU if it had been locked (restricted from arming / blasting) from the Surface Blast Controller, only in the event that communication between BCU and Surface Controller cannot be re-established and the BCU absolutely has to be blasted locally.

1. BCU LOCKED will be displayed
   - Press **DEBUG** soft key to open debug menu

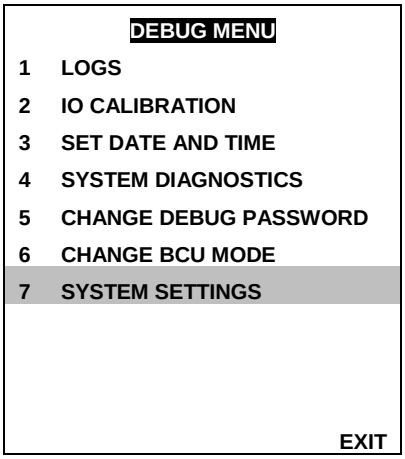


2. Debug Screen
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
   - Press **9** or **7** in either **DriftShot** or **4G mode**s to select **SYSTEM SETTINGS**

DRIFTSHOT MODE



BCU 4G MODE



DetNet South Africa Copyright © 2019

3. System Settings Screen

NOTE	**The following screen depicts an example of the System Settings – Version numbers as displayed may be different on the Users' display.**

- Press **ENTER** and then press keys 0 – 9 sequentially

```
SYSTEM SETTINGS
LOCAL I.P. ADDRESS :
192.168.001.021

LOCAL MAC ADDRESS:
123.200.021.123.200.021

BOX I.D.:
600

MAIN VER:   34481b          HW VER:  3f0
PL SW VER:  33753
IO SW VER:  34504
UI SW VER:  31147

  IP        MAC       BOX
CHANGE    CHANGE    CHANGE        EXIT
```

4. Surface Lock Override
   - Enter CHALLENGE response to unlock BCU locally.

```
SURFACE LOCK OVERRIDE

IN ORDER TO UNLOCK BCU THAT
LOST SERVER COMMUNICATION,
ENTER RESPONSE CODE  12345

YOUR RESPONSE :

PRESS ESC TO EXIT
```

5. Surface Lock Override
   - Lock disabled

```
SURFACE LOCK OVERRIDE

BLAST CONTROLLER LOCK NOW
LOCALLY DISABLED!
PROCEED WITH CAUTION
```

CAUTION	**PROCEED WITH CAUTION**

DetNet South Africa Copyright © 2019

13.5. Periodic Scan Setup (After locking)

The objective of this setting is to reduce possible corrosion caused by continuous current flowing through the detonator harnesses. The periodic scan setup function operates only after the BCU is locked and allows the user to set the "dead time" where the BCU will have zero line output for a specified number of minutes (set between 0 and 59 minutes where zero is continuous; the default is 15 minutes) in order to combat harness wire and connector corrosion.

After a power cycle or software upgrade, the following flash screen will be displayed and will require the user to press ENTER to continue to the main menu screen.

DEFAULT SHUTDOWN/SCAN VALUES

LOCKED SCAN INTERVAL SET TO
0 MINUTES

PERIOD SKIP HOLE COUNT SET TO
20 HOLES

PRESS ENTER TO CONTINUE .

R : 4

1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **0** to select **SCAN SETUP**

1 LOGS
2 IO CALIBRATION
3 SET DATE AND TIME
4 SYSTEM DIAGNOSTICS
5 CHANGE DEBUG PASSWORD
6 ASSIGN TEMPLATES
7 EDIT TEMPLATES
8 CHANGE BCU MODE
9 SYSTEM SETTINGS
0 SCAN SETUP
EXIT

4. Scan Setup
   - Using the numerical key pad, enter OPTION 1 (PERIODIC SCAN SETUP)
   - Press **EXIT** to exit screen.

SCAN SETUP

1. PERIODIC SCAN SETUP
2. MAX SKIP DET SETUP
3. DISABLED CHANNEL SETUP

EXIT

DetNet South Africa Copyright © 2019

5. Periodic Scan Setup

NOTE	**Set between 0 and 59 minutes where zero is continuous; default 15 minutes**

- Using the numerical key pad, enter new scan interval
- Press enter to continue
- Press **ESC** or exit to return

PERIODIC SCAN SETUP

CURRENT SCAN INTERVAL : 15 MIN
ENTER NEW SCAN PERIOD:

PRESS ESC OR EXIT TO RETURN

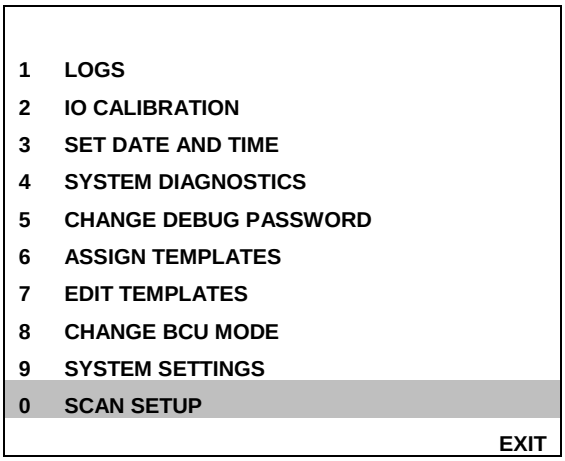
EXIT

DetNet South Africa Copyright © 2019

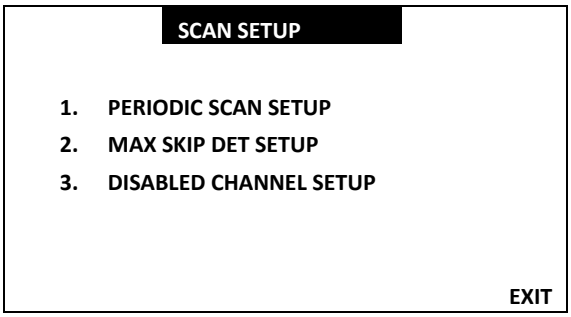
13.6. Max Skip Det Setup

The max skip det setup enables the user to specify the number of skipped detonators. BCU will scan for detonators and after the last detonator is detected it will scan for an additional number of detonators in sequence as specified to ensure that a gap while tagging, or a missing or bad detonators does not cause the scan to miss detonators that are still connected after the bad/missing/skipped detonators.

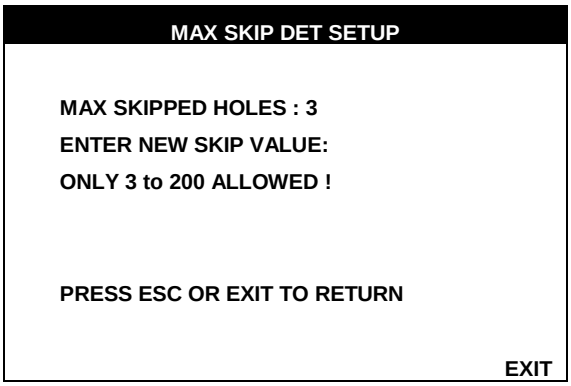
1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **0** to select **SCAN SETUP**



4. Scan Setup
   - Using the numerical key pad, enter OPTION 2 **MAX SKIP DET SETUP**
   - Press enter to continue
   - Press EXIT to exit screen.



5. Max Skip Det Setup
   - Using the numerical key pad, enter new skip value
   - Press enter to continue
     - Current scanned det counts will be reset upon skip value change.
   - Press **ESC** or exit to return



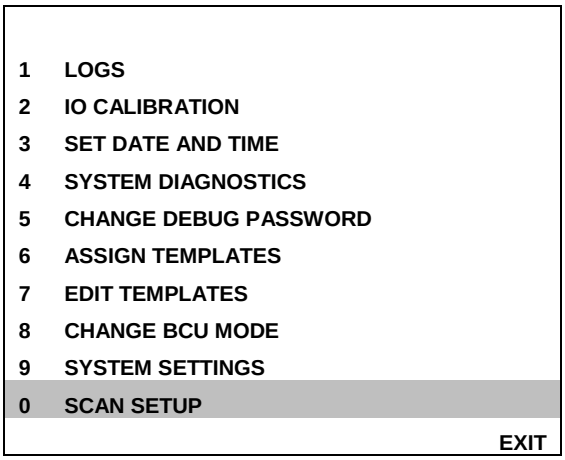
NOTE	**Only 3 to 200 ALLOWED will be displayed when the value entered is out of range.** **This setting will affect the time required to scan the connected detonators**

DetNet South Africa Copyright © 2019

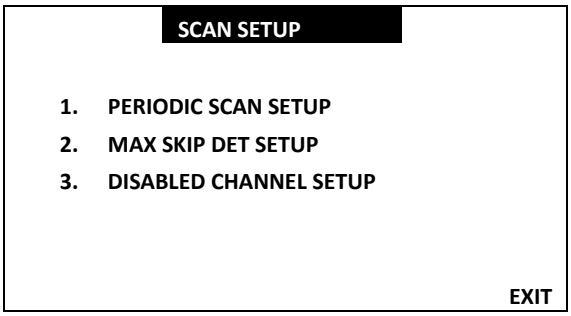
13.7. Disabled Channel Blasting Setup

When the blast policy is enforced, a disabled channel will alter the blast in a specific way. The Disabled Channel Setup function will enable the user to either enforce the policy or ignore the policy. When the policy is enforced, a single SmartShot channel that is disabled, will cause all other SmartShot channels to be disabled and not blasted as well, in order to prevent choked blasts where SmartShot channels are used on the same heading. Only disabled DriftShot channels will not blast.

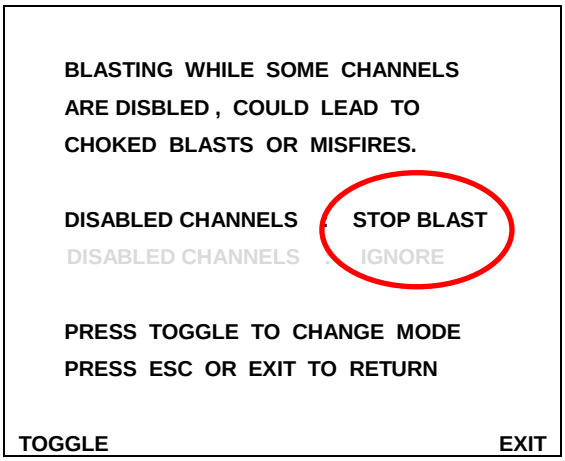
1. Display Main Menu
   - Press **DEBUG** soft key to select **DEBUG**
2. Password
   - Using the numerical key pad, enter four digit password
   - Press **ENTER** to continue
   - Press **EXIT** soft key to exit
3. Debug Screen
   - Press **0** to select **SCAN SETUP**



4. Scan Interval Setup
   - Using the numerical key pad, enter OPTION 3 **DISABLED CHANNEL SETUP**
   - Press enter to continue
   - Press **EXIT** to exit screen.



5. Disabled Channel Blasting
   - "STOP BLAST" or "IGNORE" will be displayed
   - Press the **TOGGLE** Soft Key to change the mode
   - Press **ESC** or **EXIT** to return



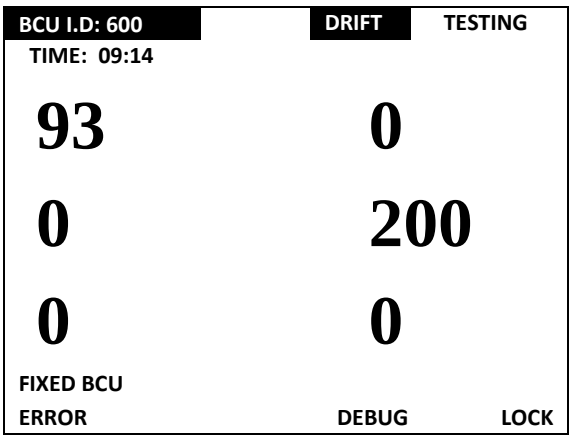
DetNet South Africa Copyright © 2019

13.8. Bootload Mode Setup

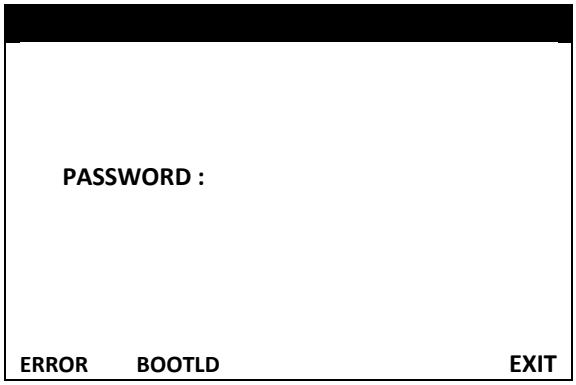
The soft-boot option on the BCU is used to minimize the chance of settings, and more specifically logs, corruption when performing a firmware upgrade.

NOTE	**The BOOTLOADING function is accessed from all DEBUG password-requesting screens using the "BOOTLD" soft menu option.**

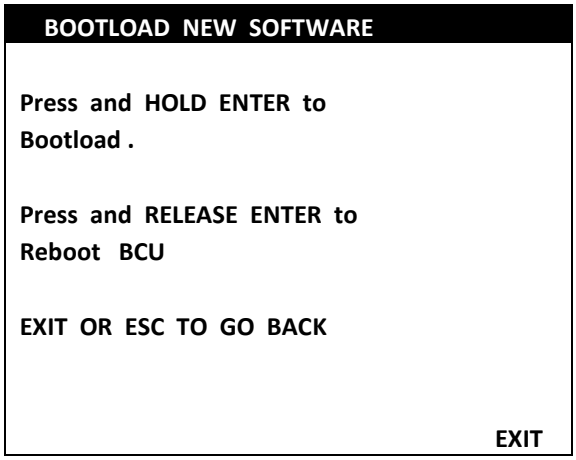
1. From the main screen
   - Press **DEBUG** soft key to select DEBUG



2. The password-requesting screen will be displayed
   - Do not enter a password
   - Press **BOOTLD** to start the bootloading process



3. Message will be displayed indicating available functions.
   - Press and keep the **ENTER** button pressed-in while BCU resets to enter Bootloader mode from where new software can be loaded.
   - Press and release the **ENTER** button to enable the BCU to simply reboot
   - Press **EXIT** to return to the main screen



DetNet South Africa Copyright © 2019

When Bootloader mode was selected, the screen will prompt the user to keep the **ENTER** button pressed in

```
//////////////////////////////////////////////
//                                          //
//          BCU REBOOTING...                //
//                                          //
//        Keep ENTER pressed                //
//        in order to BOOTLOAD.             //
//                                          //
//////////////////////////////////////////////
```

System parameters corrupt

- In the event that recovery of IP, MAC and ID fails, the BCU will most likely not be able to communicate with the surface controller, in which case the BCU will require its settings to be physically reset by user at the BCU, or require a bootload via usb.
- Settings such as timing templates could be lost, and is a given when upgrading from a version older than 31934.

```
SYSTEM PARAMETERS CORRUPT!
VERIFY ALL SYSTEMS SETTINGS
AND TEMPLATES BEFORE BLASTING !

Attempted to recover these :
IP : 192 . 168 . 001 . 002
MAC : 123 . 085 . 086 . 087 . 088 . 089
BCU ID : 502
BCU Mode : DriftShot BCU4G

Press ENTER to RESET and CONT.

R : 4
```

After a power cycle or software upgrade, the following flash screen will be displayed and will require the user to press ENTER to continue to the main menu screen.

```
DEFAULT SHUTDOWN/SCAN VALUES


LOCKED SCAN INTERVAL SET TO
0     MINUTES

PERIOD SKIP HOLE COUNT SET TO
20    HOLES

PRESS ENTER TO CONTINUE  .

R : 4
```


DetNet South Africa Copyright © 2019