

# Keiron PRO Timer Users Guide

## Firmware version 1.9



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## **PRO Timer Introduction**

The Keiron PRO Timer is both a timer and the main, portable controller for the Keiron PRO laser training system. As a controller, the unit may be used to configure Keiron targets and other accessories, as well as act as the master network controller for the associated wireless network. As a timer, it functions as a very accurate shot timer, recording the times each Keiron PRO target is shot, and allowing the shooter to review overall times, split times, transition times and so on.

The unit makes provision for advanced automatic target scoring, where points are allocated for hits, but subtracted for hits on no-shoot targets or a failure to hit designated targets. Total score is then divided by the time taken for the course of fire, providing a direct measure of the shooters accuracy and speed potential.

### **Comparison to conventional shot timers**

Using a Keiron PRO Timer is very similar to using conventional shot timers with live fire shooting. The user presses the START button to start the timer and the course of fire, and when finished shooting, presses the REVIEW button. The time is displayed.

However, there are major differences in operation that needs to be understood. Where the conventional shot timer picks up the sound of gunshots, and does not know whether any targets were struck or not, the PRO Timer shows the actual hits on the targets, but does not know whether targets were shot at but missed. (Unless using a Keiron PRO weapon training system that records all shots taken).

The PRO Timer provides a lot of diagnostic information that a conventional shot timer simply cannot provide. Each Keiron PRO device has a unique serial number. When a target is shot, not only is the time recorded, but the actual targets serial number. The information is displayed immediately and also saved for later review.

For tactical training, this information can be vital to analyse after a training session, as it allows a step by step deconstruction of the sequence of action, highlighting the decision making and ability of the shooter. For competition training, the information allows the direct comparison of different tactics.

Although the unit is simple to operate, please take the time to quickly read through the user guide to familiarise yourself with all the features.

## Wireless Operation

All Keiron PRO products communicate wirelessly using a custom wifi networking protocol developed especially for the Keiron PRO system. The industrial, scientific and medical (ISM) radio band is used. Depending on your country, this will be centred around either 915MHz or 868MHz. This band is licence free, and the radios are FCC approved and certified. Please see the back of this user guide for more information.

The Keiron PRO wireless networking protocol is sophisticated, supporting an advanced error handling and recovery mechanism, timing management and power management. The protocol ensures the information is reliably transmitted and with accurate timing. Should any unrecoverable error occur, the affected device will alert the user.

Using the system is however very simple, and most of the time the networking is transparent to the user. For example, there is no need to pair individual targets one by one, which would be very onerous in a large system.

Instead, the Keiron PRO system uses a pre-determined and pre-programmed system to automatically pair devices in multiple systems.

If using a single system, generally the “out of box” settings are sufficient. To use the system, switch them on and start shooting!

## Using multiple Keiron PRO systems

Keiron PRO supports up to 20 separate systems, with many targets and devices per system, in one geographic location.

To set up separate, multiple systems is very easy. First select a unique channel number (think of this as a SYSTEM ID) on your PRO Timer. Then link the associated Keiron PRO targets to that PRO Timer system, by sending the configuration data to those targets. Repeat for the next system. You are done! This should only take a few seconds or minutes depending on the size of the system, and is explained later in this user guide.

## Training Modes

The following training modes are supported:

- Free shoot – no timer
- Shot timer

- Scored round
- Draw and shoot 1
- 5 Target Challenge

## **Training Mode: Free shoot – no timer**

This is the simplest of the modes, and useful for when setting up targets and / or a new stage. In this mode, each time any target is shot, the target ID and the shot number (count) is shown.

## **Training Mode: Shot timer**

In this mode the PRO Timer functions in a similar way to a conventional shot timer. Every time a target is shot, the “hit” is recorded and time stamped. This applies to any target that is configured on the same channel. No set up of targets is required for this mode.

Both the time the target was shot and the target ID is recorded. The information is recorded and may be reviewed later.

## **Training Mode: Scored round**

This is an advanced training mode, using both points accumulated by hitting targets and timing to calculate a score. At the end of the session, the total points accumulated, is divided by the time in seconds to give the hit factor (points scored per second).

A conventional shot timer type display is shown when shooting, but when reviewing the session, a summary is shown. Here the number of good hits, missed targets, NOshoot targets together with overall time is shown. By scrolling, a shot by shot analysis may be performed on the session.

When using this training function, all targets to be shot must be known to the PRO Timer, and designated as either normal shoot targets (must be shot twice) or as NO-shoot targets (must not be shot). This designation is easily performed using the RANGE SETUP MENU, available as an option from the MAIN MENU.

## **Scoring:**

Each hit on a normal shoot target adds 5 points to the points total, up to a maximum of 10 points per target.

Each hit on a NO-shoot target subtracts 10 points from the points total, up to a maximum of -20 points per target.

Each normal shoot target that is not shot at all (either missed or not engaged), causes 10 points to be subtracted from the points total.

At the end of a round, after adding up all the points, the points total is divided by the time taken to complete the round (in seconds). This then gives the score for the round, displayed to 2 decimal places.

## **Training Mode: Draw and shoot 1**

This mode is used for high volume, repetitive draw practice. The system provides a shoot notification, and the shooter must then draw and fire on a target. The time is recorded, a random delay is inserted, and the process repeats itself. When the training is complete, the times may be reviewed. As with all the Keiron PRO system modes, not only the time but also the target ID that was shot is shown.

## **Training Mode: Five Target Challenge**

This mode presents an automated method of drawing, shooting 5 targets once each, and presenting the time for the drill automatically. You will need 5 targets for this, as the system keeps track of each of the five targets unique serial numbers.

As soon as any 5 targets (in any order) record a hit, the session is ended and the time displayed automatically. Further hits will not be recorded. If a target is shot twice, the second hit will generate an error and will not count towards the 5 hits required. In this way, only 5, separate targets may be shot once and time keeping is automatic.

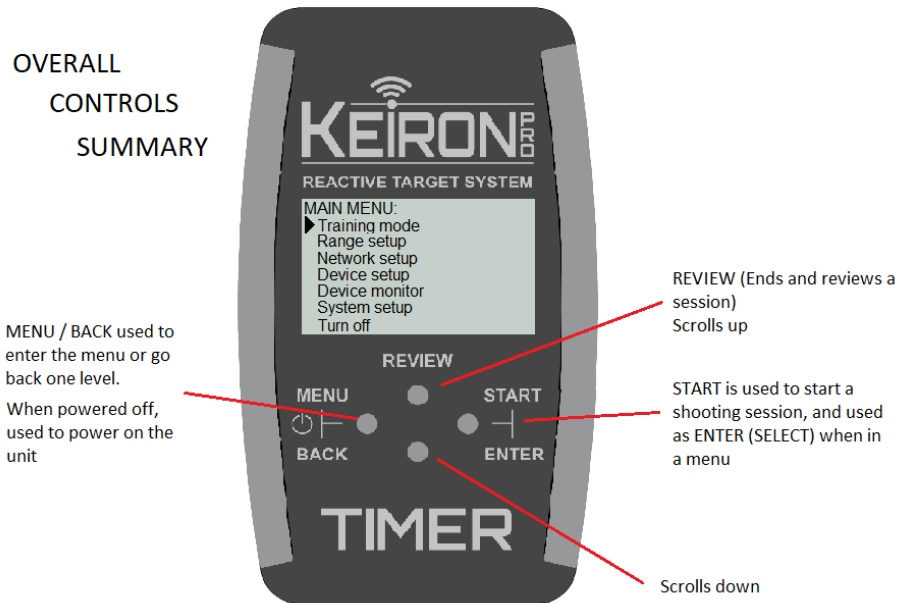


# PRO Timer Control Summary

The PRO Timer is very easy to operate via the generous display and 4 buttons. All settings are logically grouped into menus.

The button function changes depending on the state of the PRO Timer. When a menu is active, all 4 buttons are operational, and the button on the right is used as the ENTER button. Once your setup is complete, the right hand side button acts as the START button. While shooting, all buttons are disabled except for the top REVIEW button which is used to end the session and enter review mode.

## OVERALL CONTROLS SUMMARY



# MENU Controls

## MENU CONTROLS

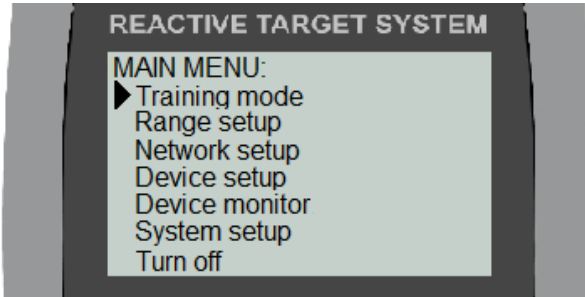


When the system is being configured, the buttons as depicted above are used to interact with the menu system. The left button brings up the main menu, the 2 middle buttons scroll up and down or increase and decrease values, and the right button selects it. When a menu is up on the display, pressing the left MENU / BACK button goes back a level. If the MAIN MENU is shown, pressing MENU / BACK exits the menu system. In practice, it is very intuitive and easy to operate.

# MENU OPERATION

All configuration of the system is performed via the various menus. A summary of main menu functions is described below, followed by a more detailed explanation of each menu option.

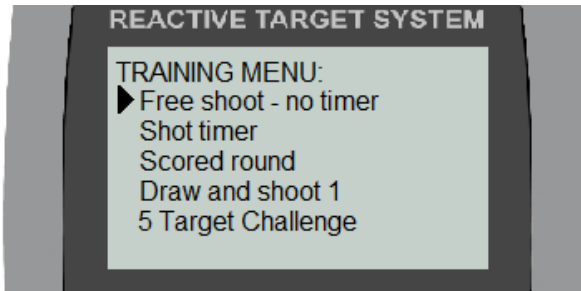
## MAIN MENU



The main menu groups together various configuration options by logical function. The following options with sub-menus may be selected:

Training mode	Used to select the training mode (Free shoot, shot timer, Scored round, Draw and shoot
Range setup	Configures targets as shoot / NOshoot targets, lists targets, delete targets and sets start delay
Network setup	Selects channel to be used and sends channel data to targets
Device setup	Remotely configures targets, sound effects, other accessories
Device Monitor	Displays information from remote devices, such as battery level and programmed settings
System setup	Sets various options such as the start signal, backlight, contrast, beeper
Turn off	Powers down the unit

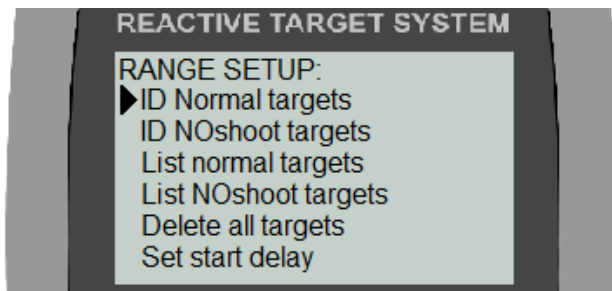
## TRAINING MODE MENU:



This menu allows one of the various training modes to be selected.

Free shoot-no timer	Selects free shoot mode. See page 7
Shot timer	Selects Shot timer mode. See page 7
Scored round	Selects Scored round mode. See page 7
Draw and shoot 1	Selects Draw and shoot 1 mode. See page 8
5 Target Challenge	Selects the 5 target challenge mode. See page 8

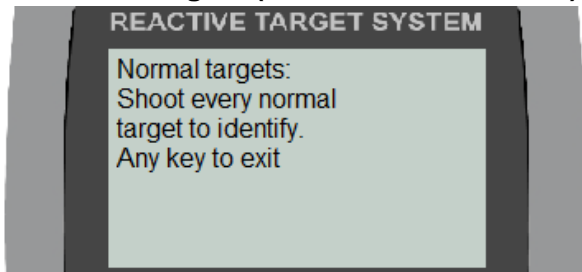
## RANGE SETUP MENU



This menu is used to set up the actual deployment of your targets. Place all the targets in the desired position, then use this menu to tell the Keiron PRO Timer what you have. This arrangement is only relevant to the “SCORED ROUND” training mode, and is ignored in the other modes. If setting up a new stage / range, provided the function and quantity of the targets are remaining the same, this step does NOT need to be repeated. Targets are identified by shooting them.

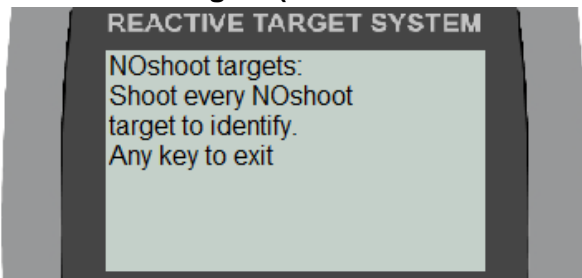
The start delay may also be set via the last option.

## **ID Normal Targets (RANGE SETUP MENU)**



This function is used to select the targets that are to be used for a scored round. A very simple system has been devised to do this. Simply select "ID Normal Targets", and shoot the Keiron PRO targets you have selected to be normal targets. The target ID will be saved, and a message will appear to indicate this. If the target was previously designated as a NO-shoot target, it will be resaved as a shoot target. Again, a message will appear to indicate this.

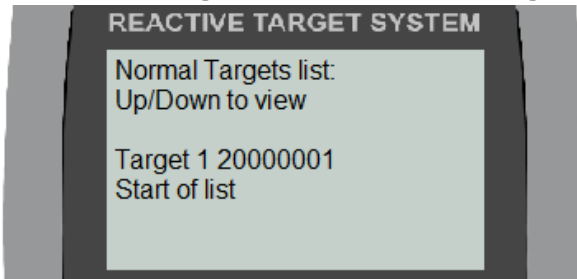
## **ID NOshoot Targets (RANGE SETUP MENU)**



This function is used to select the NOshoot targets that are to be used for a scored round. A NOshoot target is often placed in front of and partly covering a normal target, simulating a hostage situation. It may not be shot, forcing the user to aim very carefully.

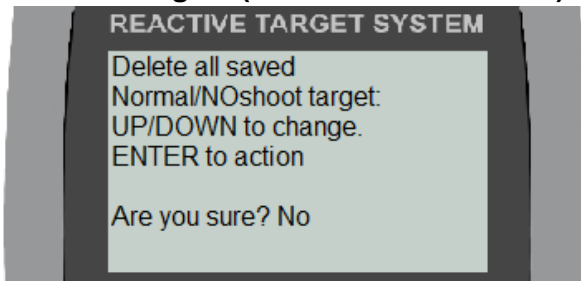
To designate a target as a NOshoot, simply choose this menu option and shoot all the NOshoots! The target ID will be saved as a NOshoot target. A message will appear to indicate this. If the target was previously designated as a normal target, it will be resaved as a NOshoot target. Again, a message will appear to indicate this.

## List normal targets & List NOshoot targets (RANGE SETUP MENU)



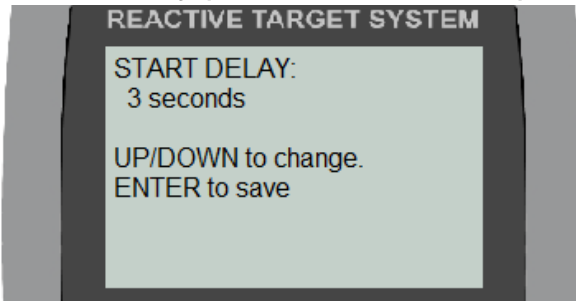
These options allow you to see a list of saved targets, and saved NOshoot targets respectively. Scroll through the list using the UP/DOWN scroll buttons, use either of the other buttons to exit.

## Delete all targets (RANGE SETUP MENU)



This option allows you to delete every target saved in the system. When choosing "Delete all targets", the screen shown above will be presented. Press MENU/BACK to exit, or change the default "No" to a yes using the UP/DOWN buttons and press ENTER. The targets will be deleted.

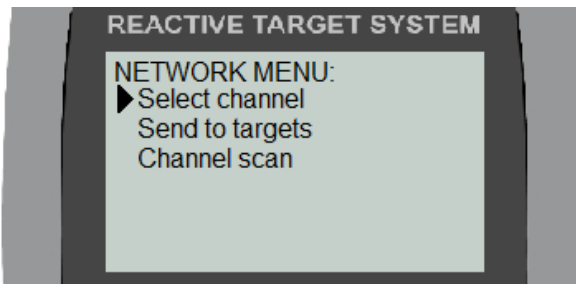
## Set Start delay (RANGE SETUP MENU)



The start delay may be set from 0 to 20 seconds. Note that for the training mode “Draw and shoot 1” the delay set here, is added to a variable random delay. Use this feature to minimise delay when training with for example a competition holster, or add to the delay to give you more time to re-holster the firearm if drawing from deep concealment.

If acting as an instructor, it is convenient to set the delay to 0 to facilitate range commands.

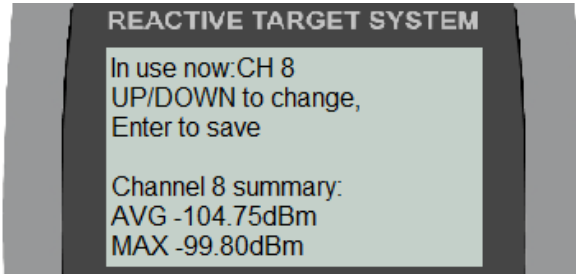
## NETWORK SETUP MENU



All Keiron PRO devices forming part of a logical system must be on the same channel. On some of the devices in the Keiron PRO system, one may not select the channel directly. Instead, the channel is selected on the PRO Timer, and then sent to the other targets and devices in the system using the “Send to targets” option. Should you suspect any type of radio problem, use the Channel scan feature to have a graphic depiction of all the channels displayed. Choose a channel with the lowest noise.

## Select Channel (NETWORK SETUP MENU)

Having chosen the “Select channel” option on the network menu, the following will be displayed:

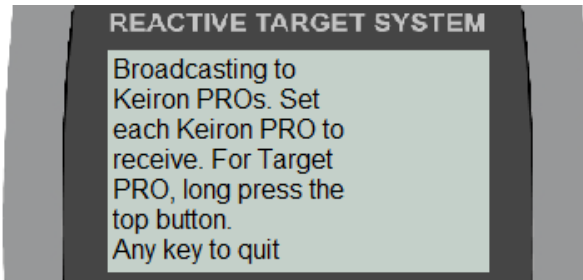


Use the UP/DOWN keys to scroll through the available channels. The background noise is displayed at the bottom of the screen. Smaller numbers are better. Choose the desired channel, and press ENTER to save.

## Send to targets (NETWORK SETUP MENU)

Choosing this option will send the channel and configuration data to other Keiron PRO devices, such as the Target PRO targets, the Keiron PRO Gunshot Audiobox and other devices.

The following screen will be displayed:



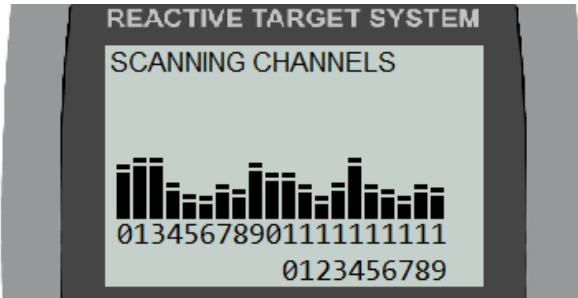
Configuration information is broadcast every second, for 90 seconds. See the user guide for the other products for more info. Hint: You can set all the other devices to wait for an instruction before sending, or you can set them one by one.

Any button ends the broadcast and returns to the Network menu.

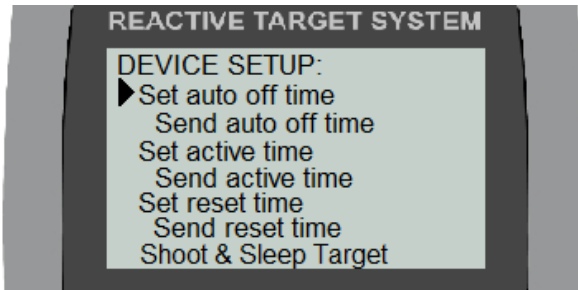


## Channel Scan (NETWORK SETUP MENU)

Choosing this option provides a graphical display of the radio channel activity. If you are in an area with a lot of radio activity close by on the ISM band, or are using other wireless devices on the ISM band, then this scanner function is useful to find a quiet channel to use for enhanced wireless network performance. The solid bar shows the average noise level, with the top stripe showing the peak. Choose a channel with the lowest noise.



## DEVICE SETUP MENU

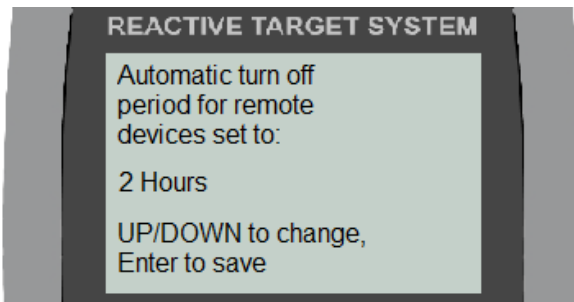


The PRO Timer incorporates a function to remotely program various options into other Keiron PRO devices, such as the Keiron Target PRO, the Gunshot Audio device, the Audio Effects devices, the PRO Illuminator etc. Almost all devices incorporate an “AUTO OFF” function to conserve power. When the device has not been used for the specified period, it automatically turns itself off (goes to sleep). The period of time may be selected on the PRO Timer, and sent to the devices. Certain products also incorporate a variable “active” time and

a variable “reset” time. As an example we can use the PRO Swinger (a swinging target). Typically this is triggered by shooting another target. Once it is triggered, the strike zone is active and the target may be shot for a variable period, that is set via this function in the Timer PRO. After the “active time” expires, the “reset time” starts. During this time the swinger target will not record any more shots, neither will it be re-triggered. After the reset period, the target may be re-triggered. These simple but powerful features allows the range designer much flexibility in setting up the range.

### **Set Auto Off Time (DEVICE SETUP MENU )**

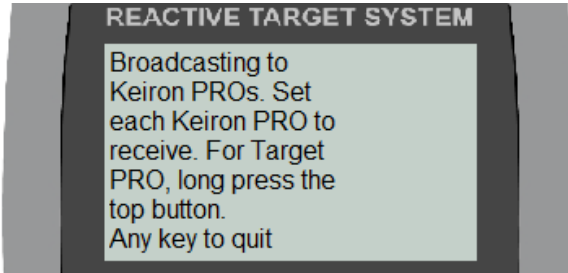
Use this function to select the desired sleep delay.



Scroll up / down to select any period from 1 to 12 hours. Press ENTER to select, then use the following menu function to send the information to the targets.

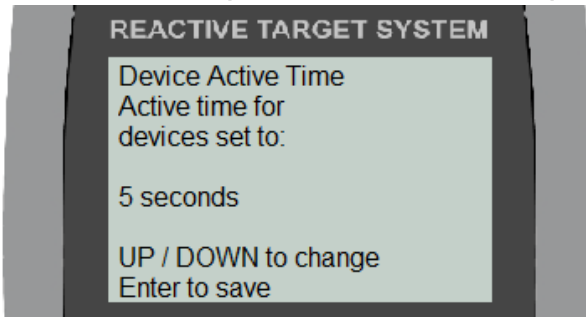
\*\* Advanced tip: You may find that in bigger systems it is advantageous to have different sleep delays for different targets. For example, you may want a 2 hour sleep delay for all normal targets, but an 8 hour sleep delay for targets set up to be NOshoot targets. This is easy to accomplish, simply select the 2 hour delay, then send that to all the normal targets, then select an 8 hour delay, and send that to the NOshoots. You are done.

### **Send Auto off time (DEVICE SETUP MENU )**



This function sends the sleep delay (auto off period) to any Keiron PRO devices configured to wait for a remote configuration command.

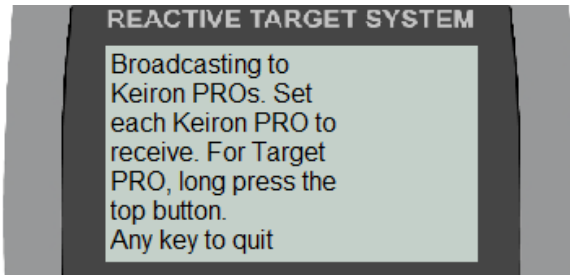
### **Set Active Time (DEVICE SETUP MENU )**



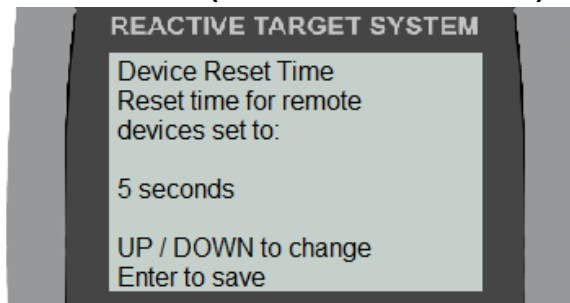
Use this function to select the desired devices active time. For example, use this function to remotely program a swinger targets active time. In this context, that will be the time that the swinger target will react to being shot, after being remotely activated. Please see individual device manuals for more information. Scroll up / down to select any period from 1 to 250 seconds. Press ENTER to select, then use the next menu function to send the information to the targets.

### **Send Active time (DEVICE SETUP MENU )**

This function sends the active time (on time) to any Keiron PRO devices configured to wait for a remote configuration command.



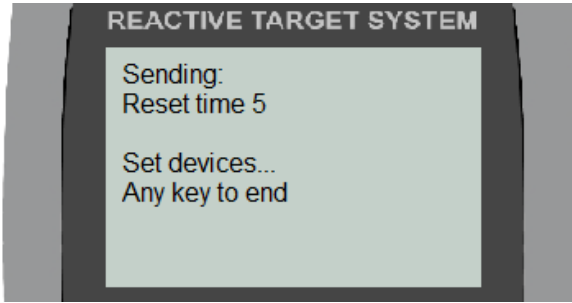
### **Set Reset Time (DEVICE SETUP MENU )**



Use this function to select the desired devices reset time. For example, use this function to remotely program a swinger target's reset time. In this context, that will be the time that the swinger target will not react to any stimulus, after being remotely activated, and after the active period has expired. Please see individual device manuals for more information. Scroll up / down to select any period from 1 to 250 seconds. Press ENTER to select, then use the next menu function to send the information to the targets.

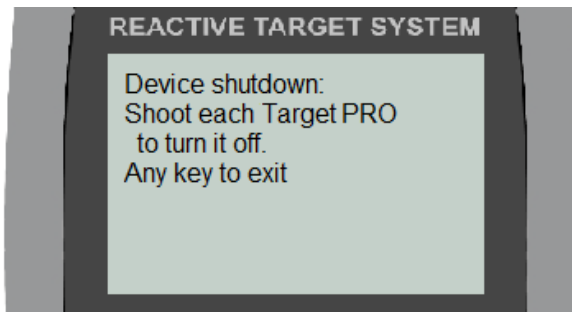
### **Send Reset Time (DEVICE SETUP MENU )**

This function sends the reset time to any Keiron PRO devices configured to wait for a remote configuration command.



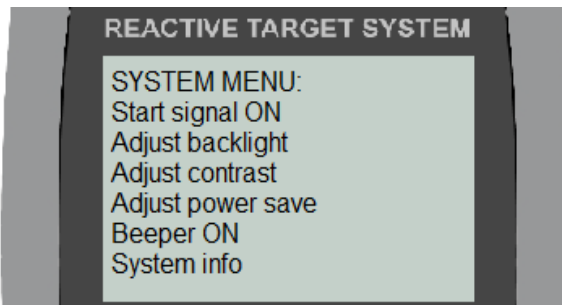
### Shoot and Sleep Target (DEVICE SETUP MENU )

This function provides a convenient remote method to shut down targets (power off). To use this, simply select this option from the menu and shoot the targets. Once shot, they will power down automatically.



### System Menu

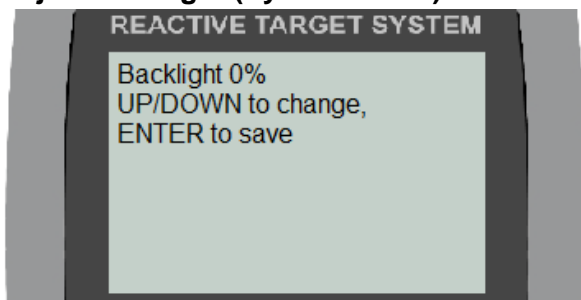
This menu allows one to control the start delay, backlight, contrast, power saving and beeper on the PRO Timer itself. One may also view information on the system.



## Start signal on / off (System Menu)

From v1.9 the PRO Timer has the ability to send out a start signal when starting a session. Other Keiron PRO devices may intercept this signal, then act in some manner to show the shooter that he / she needs to start shooting. For example, a Swinger Target may be paired to the start signal, or a PRO LED to simulate gunfire, etc. It is often convenient to turn OFF the beeper to signify a session is starting, this option is also set via the System Menu.

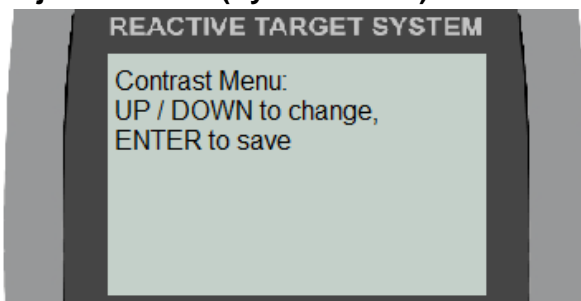
## Adjust backlight (System Menu)



The backlight may be set in 10% increments from 0 to 100%.

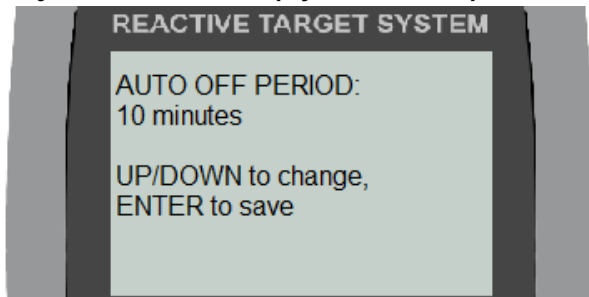
Extended use of the backlight, especially at the higher settings will reduce battery life.

## Adjust contrast (System Menu)



Adjust the contrast up or down to improve the visibility for your lighting conditions.

## Adjust Power Save (System Menu)



This setting applies to the PRO Timer itself, not a remote device. After the specified period of time passes with no button input, or targets being shot, the device will turn itself off.

The auto-off period may be set from 10 to 60 minutes, in 10 minute intervals.

## Beeper Control (System Menu)

To adjust the beeper, select the “Beeper On” or “Beeper Off” using the UP/DOWN keys when in the system menu. Pressing ENTER toggles the beeper on and off.

## System Info (System Menu)

Selecting System info from the System Menu shows various items of information on the display. This varies depending on region.

The Serial number of the unit is always displayed, as is the operating frequency and software version.

## Frequently Asked Questions

### How do I set up a new scored stage?

1. First prepare the individual targets. Attach any target overlays.
2. Physically place the targets and any other Keiron PRO devices in the desired positions. For audio devices, take into consideration the location of speakers, amplifier points, power points etc. Be mindful that products such as the PRO Illuminator are not directly facing targets to prevent false triggers.

3. Turn on the targets.
4. If any of the targets or the controlling PRO Timer have been used as part of another system / channel, then at this point follow the instructions for CHANGING CHANNELS, then come back here and continue with step 5.
5. On the PRO Timer main menu, select the RANGE SETUP menu, then "ID Normal targets".
6. Shoot each normal target, to save the target ID and function in the PRO Timer. When you done, press any button to go back to the RANGE SETUP MENU.
7. Now choose ID NOshoot targets, and again simply shoot the NOshoot targets to save the target ID and function.
8. If required, from the MAIN MENU, select TRAINING MODE, then SCORED ROUND.
9. Exit the menu system, you are done.

### **How do I change to a different channel number or system number?**

1. Switch on all targets, accessories and the controller (PRO Timer).
2. On the PRO Timer, Use the NETWORK MENU to select a new channel / system number.
3. Put all targets and accessories into RECEIVE REMOTE COMMAND mode. For the Target PRO, simply push the top button for 1 second (long press).
4. On the PRO Timer, NETWORK MENU, choose "SEND TO TARGETS". The new channel info and system number is sent to all listening devices.
5. Exit the menu, you are done. All the remote devices such as the Target Pro have now been re-programmed, and have returned to a ready state, waiting for the shooting to start.

### **How do I change a NOshoot target to a normal shoot target?**

1. Change any physical elements such as a target overlay that identify the target as a NOshoot. Then, via the Range setup menu, select ID Normal targets and shoot the target. The



target is re-programmed as a normal shoot target, there is no need to delete the target from the NOshoot target list. This also works the other way around.

### **Can I use the Keiron PRO system to set up a kill house?**

Most definitely. The PRO system was designed with that in mind. Using lasers as opposed to live fire, one can safely train 360 degrees without having to build a very expensive custom facility, and at the same time receive the dry fire benefit of building muscle memory to better handle recoil. The wireless communications seamlessly pass through typical materials used to build barricades, walls etc.

### **What is the range of the system?**

The range varies depending on height of the target above ground, the angle of the targets, what physical barriers are between the targets and the PRO Timer etc. Generally in open air, it could be hundreds of yards, and perhaps 50 yards indoors, through walls etc.

Practically though, radio range is simply not an issue and to all intents and purposes, can simply be disregarded. The PRO Timer is a portable device, and would typically be carried by the shooter training alone, or the instructor following the shooter. In this scenario, if the shooter is close enough to see the target to actually shoot it, then the wireless radios can communicate! In testing, we had to use a scoped AR15 platform with SIRT laser bolt to hit the far away targets, because they were placed so far away we could not hit them with pistols.

### **What accessories are compatible in the Keiron PRO system?**

Please drop an email off to [sales@jacstech.co.za](mailto:sales@jacstech.co.za) for the latest information.

At the time of creating this user guide, the following device are all compatible and form the overall Keiron PRO system:

1. Target PRO – the standard network target, available with red or white strike zone. Responds to red and infrared lasers, also

available responding to green lasers, and also available responding to green and blocking infrared (for NVG).

2. PRO Timer – the product described in this user guide
3. GUNSHOT Audiobox – a sound effects product, that plays a random gunshot noise each time any target is shot. This has a standard 3.5mm audio jack output, and can be plugged into any sound system
4. EFFECTS Audiobox – a programmable sound effects product, that plays different sound effects. Sound effects may be added via usb from any Window, Linux or MAC computer. This has a standard 3.5mm audio jack output, and can be plugged into any sound system
5. MOTION DETECTOR – a movement detecting product that detects movement using a PIR and may be set to activate other Keiron PRO devices.
6. MOTION ACTUATOR – a programmable product that when triggered, creates a physical movement action that could be used to open, drop or pull something...The desktop version is battery powered and portable.
7. ILLUMINATOR – a bright LED light (commercial MR16) that is triggered via the network. It is fully programmable turning on for any period from 1 to 250 seconds.
8. LED FLASHER – a high intensity LED that strobes when triggered by the network.
9. EFFECTS Relaybox – when triggered, this device simply operates a relay for a programmable time, allowing custom solutions to be built (turn on lights, lasers, pumps, open doors, etc)
10. PRO Remote – a remote control for the Keiron PRO system. Allows manual control of for example, Swinger Targets, lights, sound effects, gunshot noises etc. Very useful for instructors wishing to easily vary conditions for the shooter.
11. Custom Products – Jacstech has the capability of manufacturing custom products that integrate to the Keiron PRO system. For example, if a door is required to be opened, Jacstech can supply a powerful actuator that is linked to the

Keiron PRO system. Another example, supplying an interface for a fog machine.

## Specifications

Power Source	2 x AA Alkaline
Max Shoot targets	110
Max NO-shoot targets	15
Max shots recorded	250
Max shots per second	10
Channels	20
Max separate concurrent systems	20
Frequency Band	868 or 915MHz (country specific)
Frequency Allocation	Industrial, scientific and medical

Please contact Jacstech via [sales@jacstech.co.za](mailto:sales@jacstech.co.za) should you require different or extended specifications.

## Appendix 1 FCC ID

Units operating on 915MHz contains FCC ID: OA3MRF89XAM9A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful

interference in a residential 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

# Appendix 2 Firmware Revisions

List of Software / Firmware revisions:

- 1.0 Initial product release
- 1.1 Fixed power save bug. Under specific, not normally encountered conditions, the power save period could become corrupt, leading to the unit turning off early to save on battery power. The workaround was to simply reset the powersave period. This bug fixed in Version 1.1.
- 1.2 It was discovered that a diagnostic message had been left in the 1.1 code. This is removed in 1.2
- 1.3 Added support for Keiron PRO WIFI protocol V2.  
Added support for PRO Remote.  
Improved remote programming capability  
Changed main menu item "Target setup" to "Device setup".  
Added 2 new menu items "Set Active Time" and "Set Reset Time" to Device setup menu  
Added version number to start screen  
Various "under the hood" improvements
- 1.4 Added for 2 new geographical areas, namely New Zealand and Australia. The protocol was enhanced to comply with local legislation in these countries pertaining to radio emissions on the ISM bands.
- 1.5 Add the 5 target challenge mode.
- 1.6 Added new device monitor to main menu
- 1.7 Added "Remote Shutdown" feature, available via the Device Menu
- 1.8 Some under the hood improvements, for some planned enhancements.
- 1.9 New start signal feature added. This feature allows a session to start by some means other than the conventional "beep".