

Instruction Manual

ENG REV 2.0



PYROSURE

STATE OF THE ART PROFESSIONAL FIRING SYSTEM

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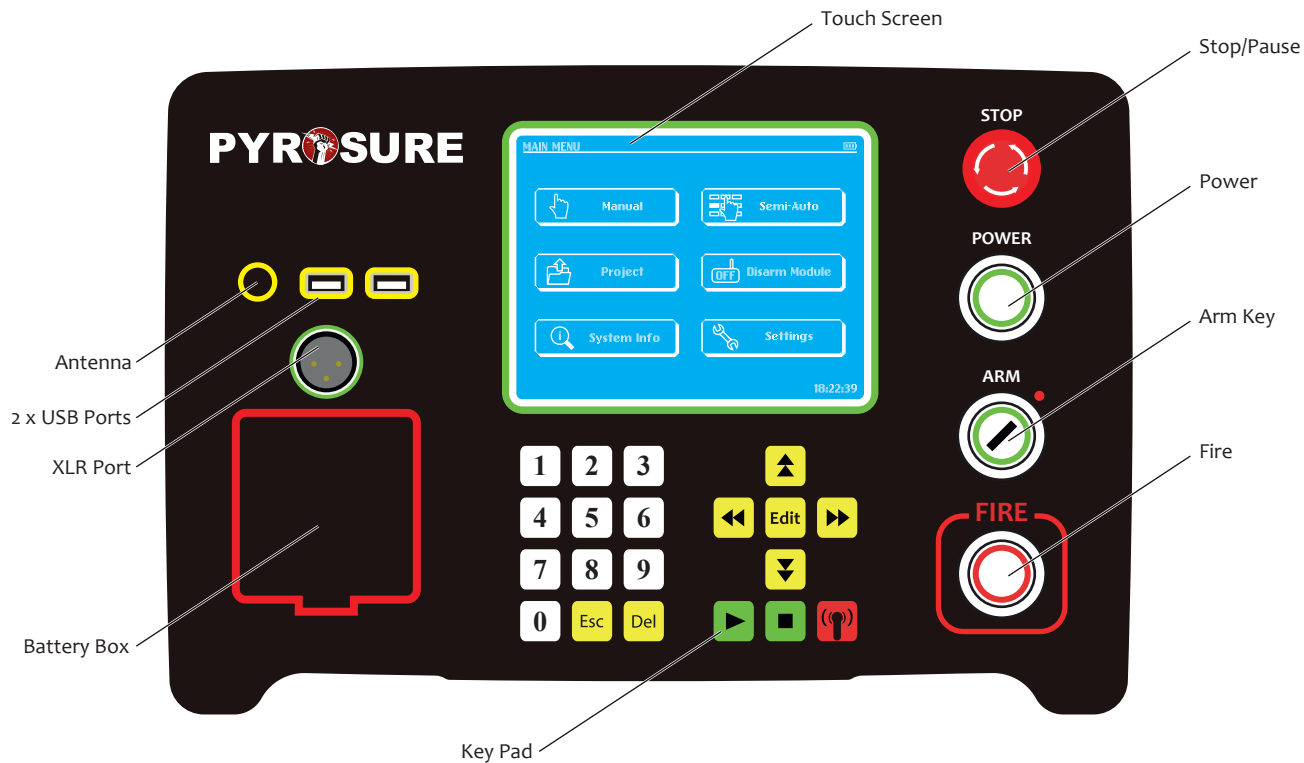
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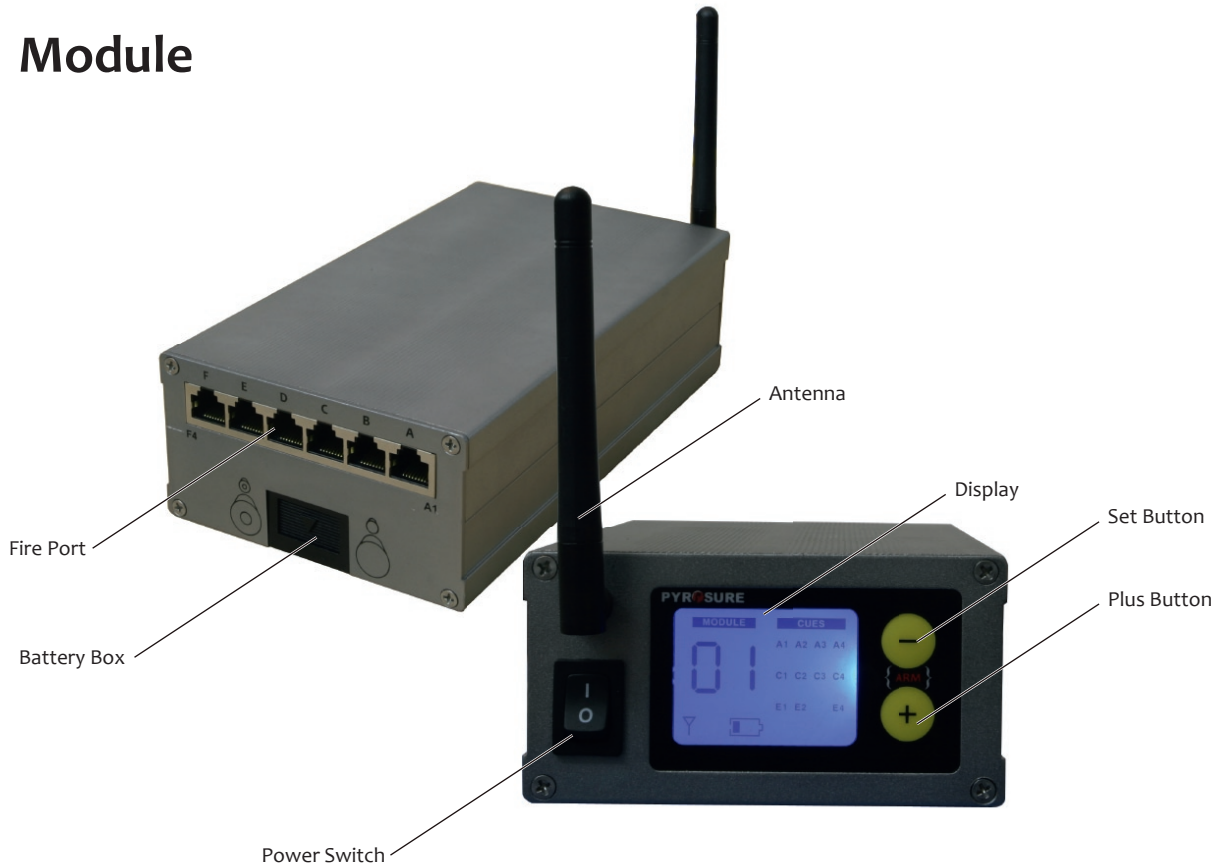
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Controller



Module



Rail-8



Rail-8 is a mini rail corresponding to 2 slats of 4 cues. It features solid copper spring loaded connection pins.

Connect to the **Module** using Cat 5 cable with RJ45 terminals. 1 cable per row of 4.

Rail-8 may be connected in parallel up to 17 times using standard e-matches.

To check the continuity of rails connected in parallel, each **Rail-8** should be tested separately.

Notes:

- Cat 5 and RJ45 are used solely to deliver power to the igniter. No form of communication is sent via Cat 5.
- Moisture will not affect performance of the power delivery.

Module-24



The **Module-24** combines a wireless module and 24 cues within an ABS case. The unit has an LED display to check power level, signal strength and cue information.

Cat 5 terminals are supplied in each group of 4 cues to connect a **Rail-8** or to plug in a strip of flat cable **SSI**.

The Module-24 is powered using 4 x AA HR 6 rechargeable batteries (1900 mAh and above recommended).

A USB power connection is available within the battery box to supply 5 volts of power from a portable or 110/240 supply. Many USB portable power banks have cut off point below 100 mah. As a result external power supplies with an on / off switch should be used

Additional Features:

- Solid copper spring loaded terminals
- Capacitor Discharge at 30v with a peak of 80 amps
- Wago brand nylon connectors with high grade stainless steel spring holding mechanism



Extender

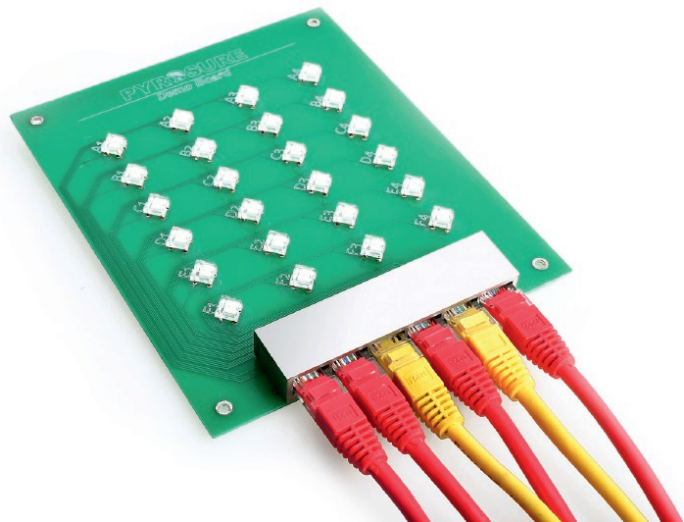
The **Extender** is used as a Rail for RJ45 flat cable SSI or SFI.

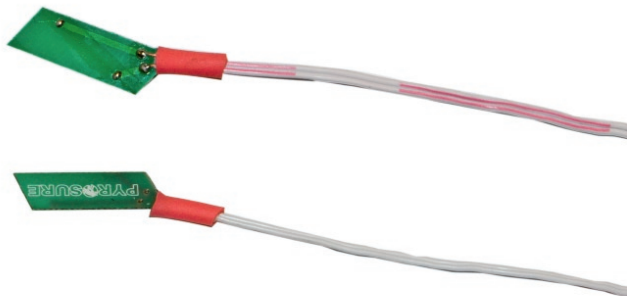
Also suitable for extending Cat 5 cables beyond 50 m to ignite single igniters. It is possible to ignite several igniters at distances beyond 50 meters but individual testing with specific cables is required.

LED Test Firing Board

The **LED Test Firing Board** is in a 6 x 4 configuration. This is the ideal device to test fire entire displays at any time.

Simply connect to modules using CAT 5 cable and each LED will represent a cue on the display. Fire as intended.





SSI

Single Shot Igniters (SSI) are non-pyrogenetic igniters, replacing standard e-matches. Electrically fire displays with ultimate safety - no risk from friction, heat, RF or static.

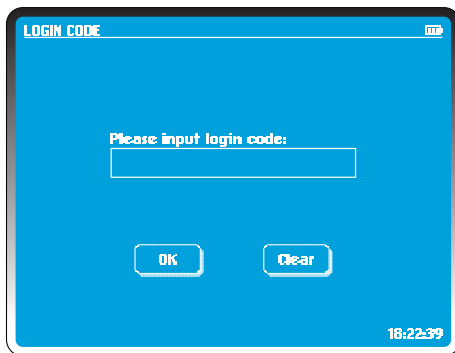
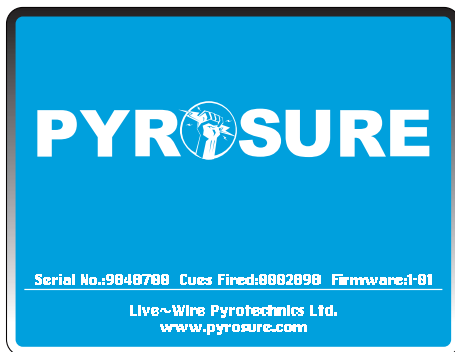
SSI can be inserted directly into lifting charges of Shells (Bombes), Candles and Single Shot Mines. **SSI** can also be inserted into Quick Match if the hot wire is fixed securely to the black match or in contact with sticky match.

SFI

Solar Flare Igniters (SFI) are designed to be inserted into Quick Match and locked into place using the unique patented clip. Electrically fire displays with ultimate safety - no risk from friction, heat, RF or static.

Note: Care should be taken to ensure contact with the black match.

Power On Controller



Power up the controller by pressing the GREEN Power Button.



The PyroSure *welcome page* includes the controller **serial number**, **total cues fired** and the **firmware** that your controller is operating.

Note: Current firmware information will be available on the website: www.pyrosure.com

The welcome page will remain on the screen for a few seconds but to proceed immediately to the *login page*, simply touch the screen.

All selections are made by touching the appropriate screen box. Amendments within the box are made using the soft key pad.

Note: It is recommended that a plastic pointer or aerial be used for screen selection for ease of use.

Controller battery meter is displayed on top right of the screen.

The system time is displayed on the bottom right of the screen. To change the system time, go to **Settings**.

Login Code

Using the keypad enter the code and select **OK**. If you make an error an 'X' is displayed on the right side of the code box. Use the **Clear** button to delete entries.

The initial login code of a new system is 11111111 (8 x 1).

CHANGE LOGIN CODE dialog box pops up allowing you to change the initial code. Enter the new code and then repeat the code as prompted. To confirm the code change, select **OK**. Please keep a safe note of your login code.

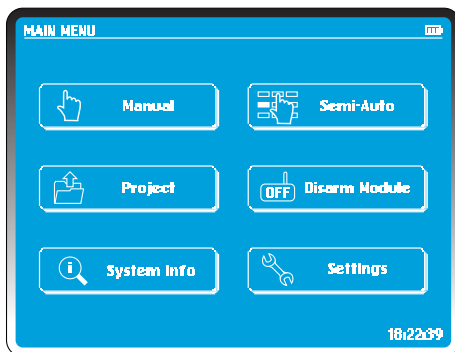
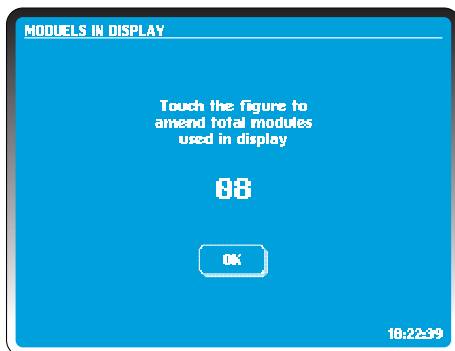
Note:

Do not display the login code inside or anywhere on the exterior of the controller. If the system is stolen it is useless without the login code. The code will also be required to arm modules. This is a supplementary security process to avoid the unauthorized use of the system.

Both the login code and arm Key will be required for full operation.

If you lose the login code you will need to return the controller to Livewire Pyrotechnic Systems in the UK. Only registered or known users will have the controller reactivated.

Total Modules



During system startup, input the total modules to be used in the display. If designing a show in **Semi Automatic** it will also be necessary to amend the total modules to allow allocation of firing cues.

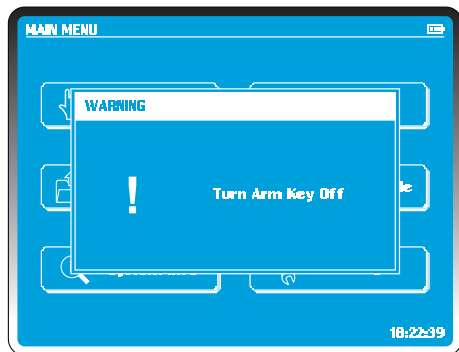
The total modules entered must match the total number of modules being used to fire a display.

Additional modules can be added to the network without cues connected. This may be advantageous in a site where communication is difficult.

If you are using 8 modules, touch the screen and using the key pad enter **08** and select OK. The system will default to the **Main Menu**.

The maximum number of modules per controller is 99.

Turn Arm Key Off



The Arm Key for Pyrosure is a universal key identical in every system.

To arm the system insert the key and turn one quarter clockwise.



To disarm turn one quarter anti clockwise. The key is locked and cannot be removed while armed.



The system will only allow you to arm at the appropriate time.

Release Stop Button



The Red Emergency **Stop / Pause** button can be pressed at any time. A stop signal is broadcast and all current and future operation of modules is paused.



During a sequence or musical display the **Stop** button can be used to pause the music and firing script.

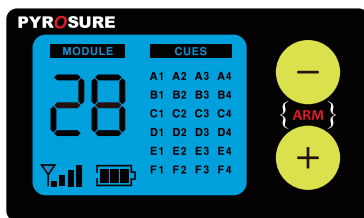
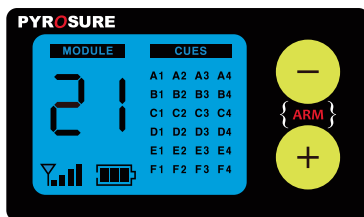
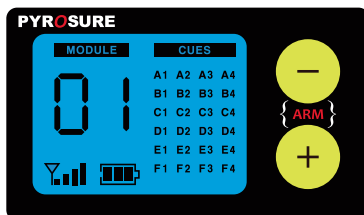
To release turn one quarter clockwise.

At this time the show can be cancelled entirely or restarted by pressing the **Fire** button.

The display and the music will resume in sync and at the exact point where the **Stop** button was pressed.

Note: the **Stop** button can be turned anti clockwise to remove the cap. This will allow the replacement of the internal spring.

Set Module Number




Example: Set module number to 28.

Press and hold  until the first digit '0' flashes.

Press  twice to adjust the first digit from '0' to '2'.

Press  to confirm the change, the second digit '1' flashes.

Press  seven times to adjust the second digit from '1' to '8'.

Press  to confirm.

It is not necessary to restart a module after setting a new module number.

Module numbers must be sequential. If you set total modules used in display as 8, then the modules must be numbered from 01 to 08 without omission or duplication. The Controller will ignore modules numbered greater than 8.

It is not necessary to have connected cues on a module to be part of a network.

Additional modules can be positioned to hop transmissions or improve the network communication. A module can also be held ready to cancel a show. Once armed, pressing the + or the - button will stop the show completely and all firing information within the modules will be lost.

The maximum value for any module is 99.

The diagram illustrates the multi-agent system architecture. At the bottom, a box labeled "Controller" is connected by a downward arrow to a central Mobile Agent (M). This central M is connected by an upward arrow to another Mobile Agent (M) above it. To the left and right of the central M are two Obstacles, each represented by a house-shaped icon. The distance from the central M to each obstacle is specified as 700m (10mw) and 1500m (50mw). The top Mobile Agent (M) is connected by an upward arrow to a final Mobile Agent (M) at the top. To the left and right of this top M are two more Mobile Agents (M). The diagram shows a hierarchical structure where the Controller manages the central M, which in turn manages the top M, and the top M manages the other Ms, all while avoiding obstacles.

- Height off ground
- Line of sight between each module
- Distance between each module

Do not turn off the controller with modules in the network. If the controller is then restarted it may select a different channel or frequency within that channel. If this occurs the module may take several minutes to rejoin. If for any reason the controller is turned off, we suggest that the modules are rebooted.

When the system is switched off, turn off modules and then the controller. When reactivated, the routing information will be retained in the module memory.

Modules have 4 bars in the signal strength indicator. At least one module in the network should be displaying a full signal meter.

Take each module to the intended firing position and switch it on. The module number will be shown and the signal indicator will flash and steady when the network has been joined.

Use the signal strength indicator on the module display screen to establish suitable positions for each module. Put the modules in a position where as many signal bars as possible are showing. Only turn one module at a time this will provide a true indication of signal strength between each module and the controller. For successful communication one bar is sufficient for operation. We suggest that modules are raised up from the ground to increase the signal strength. Moving a module away from heavy metallic objects may also increase signal strength. If strapping a module to metal, please insulate the module. As much as possible please avoid positioning modules immediately side by side. They should not be touching. Try to maintain a gap.

If a module does not join the network after a few minutes, turn off and back on. It should take 5-10 seconds to join after restarting.

In system startup, the controller will scan 14 channels at 2.4G and establish a PAN on the cleanest channel. It will make no difference if there are other WiFi networks detected. Most WiFi broadcasts are made in the lower channels 1-4, they are the most congested. PyroSure does not use fixed channels.

In the example shown the modules shown as (M) should have a full signal. In the set up shown they should be activated first to allow communication to modules in difficult locations.

REMEMBER:

If you switch off a controller with an established PAN, when reactivated the controller may establish a network in a different channel. This will cause a loss of the network, unarmed modules will scan the channels and establish the new network. This may take up to 20 minutes. Armed modules will remain in the original network. Turn the arm key to the *off* position, return to the main menu and select *disarm modules*. To verify all modules are in the network turn the arm key to the *on* position. The controller will communicate with each module any modules that have left the network should be turned off and back on again. Once the entire network is reestablished proceed to fire the show.

Connecting Fireworks

Having connected all the fireworks, switch on each individual module to check cue connectivity. All cue information is displayed on the LED screen.

Rail-8

A mini rail. It is divided into two groups of 4 cues each row connected to the module by means of a standard CAT5 cable. Cable up to 20 m can be used. Please test if greater distance is required. The Rail-8 is ideally suited for fixing to mortar racks or candle frames.

PyroSure uses CAT5 cable to conduct power to igniters and not for communication.

Any bad connection caused by mud or sand will be shown on the module display. Simply clean the connector using water or a brush or blowing into the terminal.

Module-24

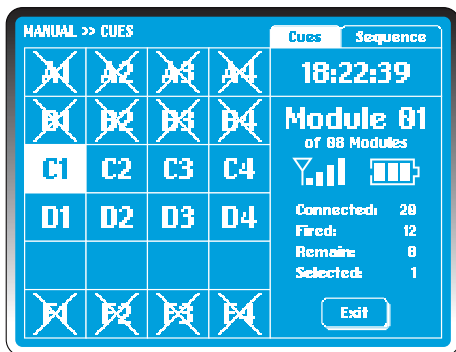
Divided into 6 groups of 4 cues to provide 24 cues. Extender ports are situated with each of the 6 groupings A-F. These can be used to connect Rail 8 in parallel to the corresponding cues on the Module 24. Rail 8 can be connected in parallel to duplicate the firing in various site positions.

The ports can also be used to plug flat cable SSI directly into the module. In this instance rails would not be required

Please visit www.pyrosure.com to get more information on Flat Cable SFI and SSI.

DO NOT CONNECT FIREWORKS TO ACTIVE MODULES

Manual Firing



REMEMBER: the FIRE button is illuminated **RED**. If in doubt, cover the green power button with tape.

Manual Firing is a function where cues are selected on the controller screen. Pressing the fire button will initiate the selected cues.

On the Manual Firing screen, available cues are represented in a grid A1 - F4. An empty grid represents no cue connected. A crossed grid represents a fired cue.

There are 2 methods to select and fire cues:

Cues -- Highlighted cues are fired by pressing the FIRE button.

Sequence -- Define a sequence to fire on any module. The sequence must be selected to fire cues. To escape this menu select CUES at the top right of the touch screen.

The “Cues” tag is highlighted on the controller screen, top right, system clock, then module information listed as:

Current Module Address

Total Modules

Signal Meter

Battery Meter

Cues Connected

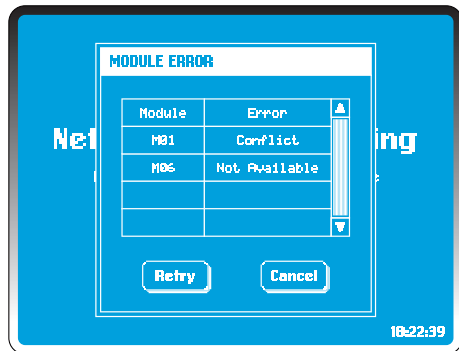
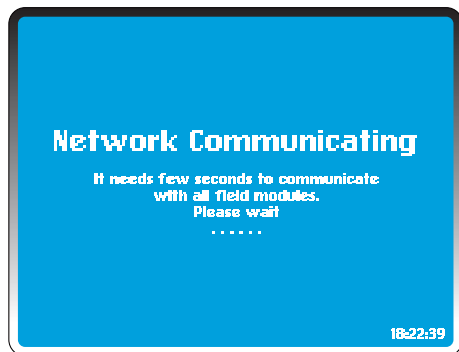
Cues Fired

Cues Remaining

Cues Selected

Only connected cues will be displayed on the module screen. Every connection can be verified on the module screen, once the cues have been checked turn the module off. The information displayed on the module screen is available in real time on the controller screen.

Network Verification



In **MAIN MENU** select **Manual**.

The Controller will check for all the modules in the Personal Area Network (PAN). The total number of modules in a network can be changed in **Settings** (see page 10).

If any of the errors listed below occur, they will appear in the error dialog box (all except the low power warning must be remedied before proceeding):

Not Available:

No module in the network has been assigned this address or has not joined the network. It can take a few minutes for modules to join so wait a few moments before checking further. To assist a module in joining a network simply turn it off and back on again.

PAN may take a few minutes to establish message routing pathways. We always recommend at least 2 modules in a PAN even if only one is being fired.

The controller will run a self diagnostic check, where appropriate it will rebuild a network.

If a module has been used with another controller it may be assigned to a different controller network and has to be added manually (see Add Module in SETTINGS.)

Spares modules always have at least one spare module added to the Controller, trouble shooting processes can be speeded up simply by changing a module which takes only a few seconds.

Conflict:

More than 2 modules have the same module number. Switch one off. With the correct number of modules in a set up a conflict will also result in a 'not available'. Change one of the module address numbers.

Low Power:

It may result in insufficient power to charge the capacitors and the module will be unable to communicate further. Change the batteries to remedy.

Once changes have been made select **Retry** or **Cancel** to quit to **MAIN MENU**.

WARNING: Use rechargeable batteries from a known brand. Avoid supermarket branded items with a power supply of 2900 mah. They will fail after 3 months. If communication is not possible after arming then the battery is not suitable or flat. You can turn the arm key off, esc to the main menu and disarm module. Repeat the arming process and the battery should now be capable of operation. The power meter in the module will indicate actual power.

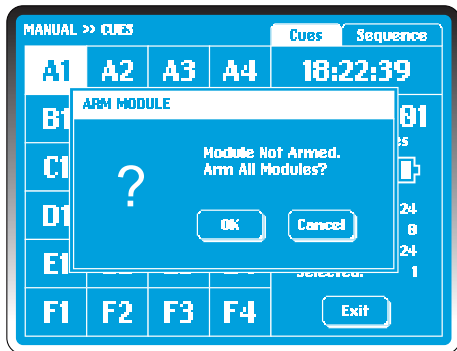
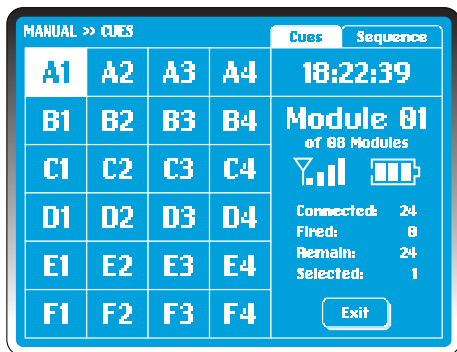
Single Cue Firing

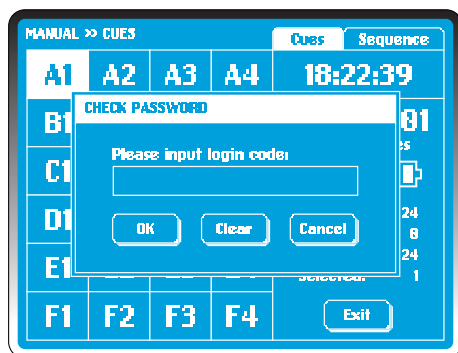
On the **Manual Firing** screen, the system will display the first module and highlight the 1st available cue.

Turn the arm key to the 'on' position.



The controller will check the armed status of all modules. If any module is not armed, you will be prompted to arm the modules.



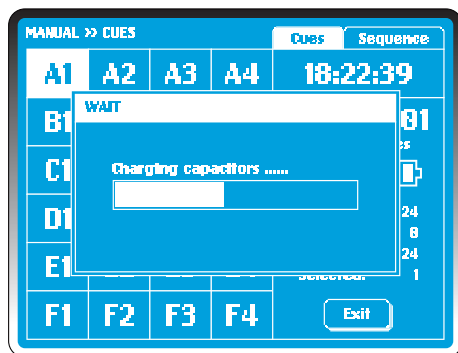


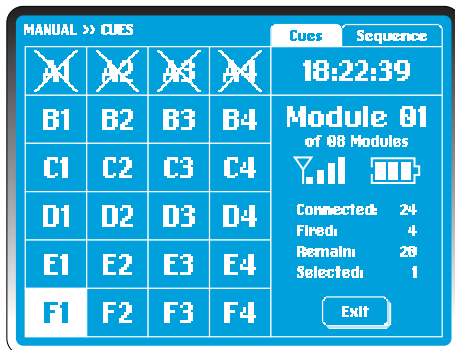
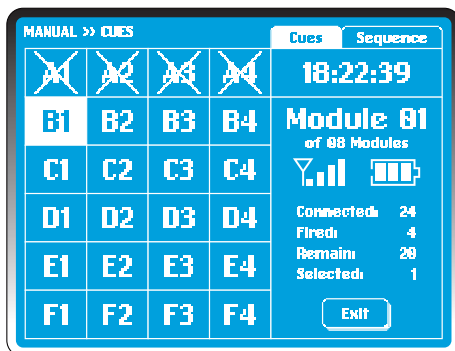
Select **OK**.

Enter the Login code to confirm.

All intended modules will immediately flash to confirm.

The capacitors will charge in 20 seconds. A progress bar is displayed on the controller screen.





The **FIRE** button will illuminate and the 1st available cue on module 01 will be highlighted.

Press **FIRE, A1** on module 01 will fire and the system will default to next available cue **A2**. As cues are fired and become unavailable they will be marked by an 'X'. Module information will change accordingly.

Press **FIRE** a further 3 tries and **A2, A3, A4** will fire. **B1** will be highlighted.

To Fire a cue out of default selection simply highlight the cue by touching the grid **F1**. **F1** is highlighted instead of **B1**.

Press **FIRE**. **F1** will fire and the module will default back to **B1**.

Switching Module

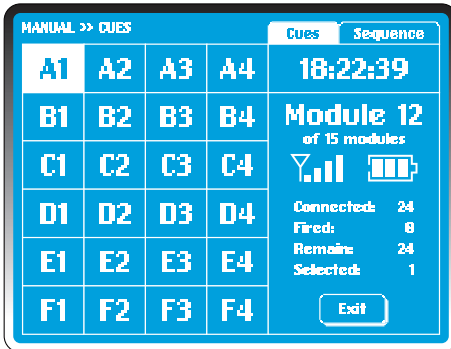
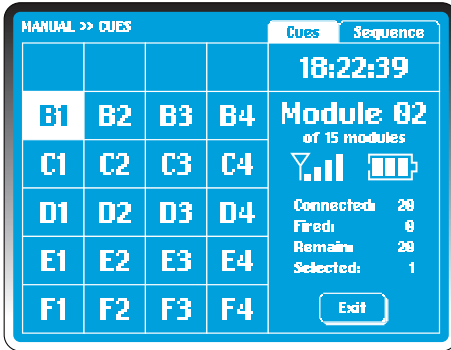
In manual fire mode it is very simple and quick to switch between modules. There are two ways to do this:

1. Using the keypad, type in the module number.

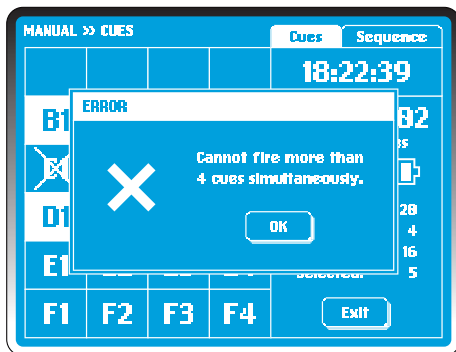
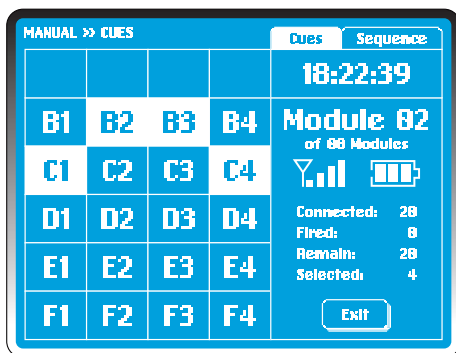
Example:

To select M02 type “2”. For module numbers greater than or equal to 10, type “012”.

2. Use the direction buttons to move up one module or to move down one module.



Multiple Cue Firing



To select up to 4 multiple cues select the first cue to be included. Then press and hold the “Edit” button. While holding “Edit” button, highlight the further cues to be selected.

In the screen example to the left, **B2, B3, C1** and **C4** are selected using this method.

Once highlighted simply press **FIRE**







The system will default back to cue **B1**.

NOTE:

If you select more than 4 cues the system will display an error screen. Select OK to resume.

Sequence Firing

MANUAL >> SEQUENCE				
				Cues Sequence
A1	A2	A3	A4	Select Start Cue
B1	B2	B3	B4	Module 08 of 08 Modules
C1	C2	C3	C4	 
D1	D2	D3	D4	Connected: 24
E1	E2	E3	E4	Fired: 8
F1	F2	F3	F4	Remains: 24
				Selected: 1
				OK

MANUAL >> SEQUENCE				
				Cues Sequence
A1	A2	A3	A4	Select End Cue
B1	B2	B3	B4	Module 08 of 08 Modules
C1	C2	C3	C4	 
D1	D2	D3	D4	Connected: 24
E1	E2	E3	E4	Fired: 8
F1	F2	F3	F4	Remains: 24
				Selected: 12
				OK

Selecting sequences and firing is extremely simple to accomplish.

On the **Manual Firing** screen select **Sequence** in the top right. The information is identical but preselected options are provided. **A1** is selected as the default cue. However the system is looking for a start cue as indicated by the prompt in the top right grid.

Example:

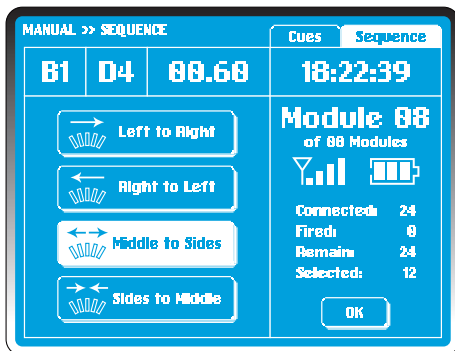
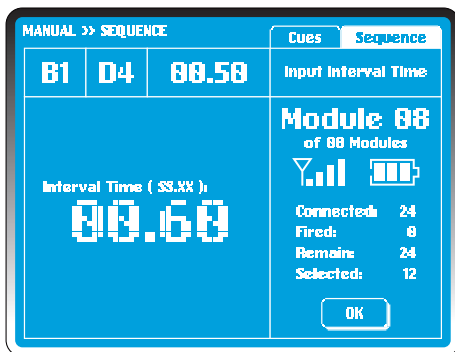
As the start of the sequence will be **B1**, it is selected and confirmed by pressing **OK**. **B1** is highlighted.

Immediately the prompt changes to “Select End Cue”, highlight the cue of your choice, above the value **B1**.

In the screen example to the left, **D4** is selected and confirmed by selecting **OK**. All the available cues from **B1** to **D4** are then highlighted.

REMEMBER:

To fire individual cues, select cues at the top right of the touch screen. The screen will indicate “SELECT START CUE” until you do.



The prompt box now asks for an interval time. The system default is 00.50 sec. To change the selection, touch the screen and the “00” numerals will flash. You can select a sequence up to 99.99 seconds interval.

Example:

Enter “00.60” using the key pad. The start cue, end cue and interval time are displayed. Once you confirm the interval time by selecting **OK** the interval time of “00.60” will replace the original default time.

The system now offers 4 choices:

- Left to Right**
- Right to Left**
- Middle to Sides**
- Sides to Middle**

Highlight the desired selection and then press **TRANSMIT** to send the firing data to the module.



Press **FIRE** when illuminated. Once the firing process is complete the module will default to the first available cue **A1** and all cues fired are crossed out on the display.

During the firing process, press **STOP** to stop firing. The system defaults to **Sequence Firing** screen with fired cues crossed out.

Available Cues to Fire

During the process of manual firing, the user can at any time display the available cues left to fire.

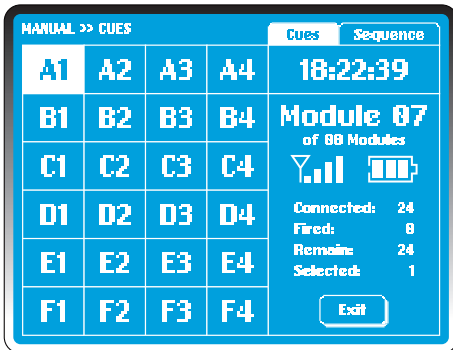
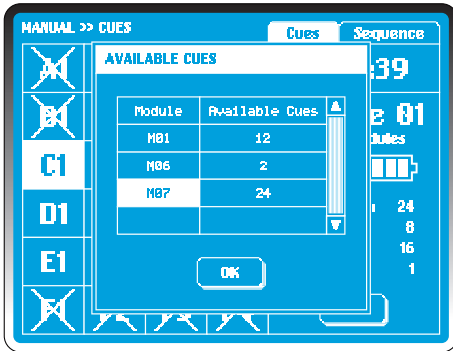
To do this, press the **PLAY** button on the touch pad.



All unfired cues will be highlighted.

Example:

In the screen example to the left, there are 38 available cues in 3 modules **M01**, **M06** and **M07**. Select **M07** and press **OK**. The system defaults to the first available cue **A1** in **M07**.



Semi-Auto Firing

The screenshot shows a software interface titled "101 22139" with a sub-header "Module: 03 Rec: 007 Cue: 0018". Below this is a grid with 7 rows and 6 columns. The columns are labeled: "Rec", "MM:SS.XX", "M01 03/24", "M02 03/24", "M03 10/24", and an empty column. The rows contain data for records 001 through 007, showing module addresses (e.g., SGE.01, SEG.02) and cue information (e.g., C1, C2, C3, C4).

Rec	MM:SS.XX	M01 03/24	M02 03/24	M03 10/24	
001	SGE.01		A1		
002	SEG.02		A2	B1	
003	00:12.00	C1		C1 D4	
004	00:13.00	C2		C2 D3	
005	00:14.00	C3		C3 D2	
006	00:15.00	C4		C4 D1	
007	SEG.03	A2	A3	B2	

REMEMBER: PyroSure defaults to the first available cue on each module when selected. These defaults can be accepted or edited at any time.

Semi-Auto Firing allows the user to enter and save firing scripts.

Information on modules is collected when the network is established and displayed on the Semi-Auto interface.

Example:

In the screen example to the left there are 3 modules each with 24 cues available.

On the screen, above the grid from left to right the following information is displayed:

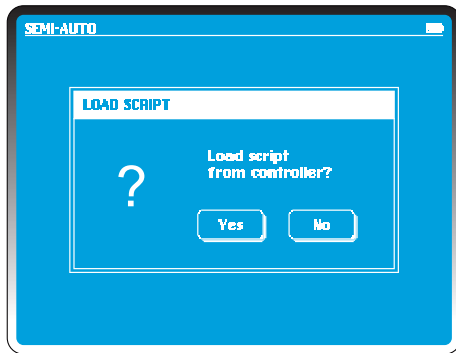
- System Time;
- Total modules, which will vary according to the display set up;
- Total records, 1 record = 1 row of time and cue information;
- Total cues;
- Battery meter of Controller;

Within the grid, displayed as column headers:

- Rec., numbering for each new record;
- Bursting time for each record;
- M01-M99, module addresses with cues selected/available;
- Each column records and displays cue information relating to that module address for every record.

Record 001 on every new Semi Auto interface will be allocated **SEG.01** as segment 1, with a bursting time of 00:00:00. Each record must contain at least one cue on one module.

Load Script

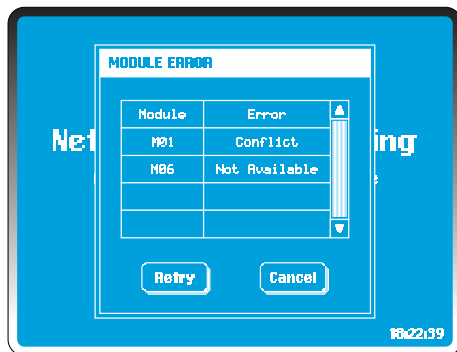
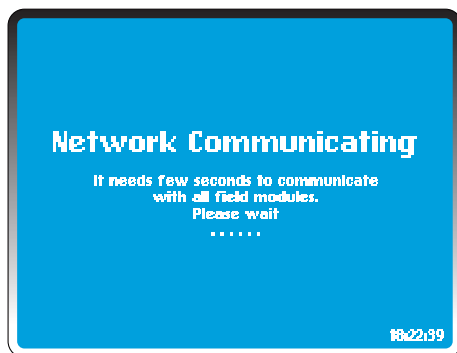


In **MAIN MENU** select **Semi-Auto**.

To load a saved script select **Yes** (See [Script List](#) function).

To input a new script select **No**.

Network Checking



Controller checks all the modules according to Total Modules entered at system startup. You can change this figure in Settings (see [Total Modules](#) in **SETTINGS**).

If any error occurs, the following errors may appear in the error dialog box (all except the low power warning must be remedied before proceeding):

Not Available:

No module in the network has been assigned this address or has not joined the network. It can take a few minutes for modules to join the network so wait a few moments before checking further. If this module has been used with other controllers it may be assigned to a different controller network. (See [Add Module](#) in **SETTINGS**).

Conflict:

More than 2 modules have the same module number.

Low Power:

Change the batteries. It may result in insufficient power to charge the capacitors.

Once changes have been made select **Retry** or **Cancel** to quit to **MAIN MENU**.

Note:

Low power in a module can be ignored. However, it is strongly advised that this is remedied before a display.

Single Cue Entry

Rec	MHISS - W	M01 00/24	M02 00/24	M03 00/24
001	SEG. 01			

Rec	MHISS - W	M01 00/24	M02 00/24	M03 00/24
001	SEG. 01		A1	

The latest information from all of the modules is collected at the network checking stage.

Example:

In the screen example to the left, there are 3 modules each with 24 cues available. As with **Manual Fire** mode, PyroSure always offers a default selection in each available Module.

To select the 2nd module, simply touch the grid below M02 and the cue A1 is added and highlighted.

REMEMBER:

PyroSure always defaults to the lowest available cue.

Once all cues in the first record have been selected simply select the grid below SEG.01.

TIP: With the Bursting time highlighted in column 2, press **PLAY** to enter the default cue for every module. Note the record must be empty and does not apply to record 001.

Each new record has a default 1 second **Step Time** (see [Step Time](#) in **Semi-Auto Firing**). **Bursting Time** is 1 second greater than the previous record and is highlighted to indicate the start of a new record.

To edit the bursting time select **EDIT** on the key pad. This can be changed to any value as long as the value is greater than the Bursting Time in the preceding record.

Once a record has been created and saved, it is not possible to amend the bursting time.

Records must have at least one cue before new records can be created.

[illegible]

Editing Cues

In the screen example on the previous page, M01 has been highlighted in the grid on Record 002. The default cue of **A1** has been highlighted. It is not required for this record.

Example:

Press **EDIT**. The system displays the collected information of current module and lists available cues in the cues grid.

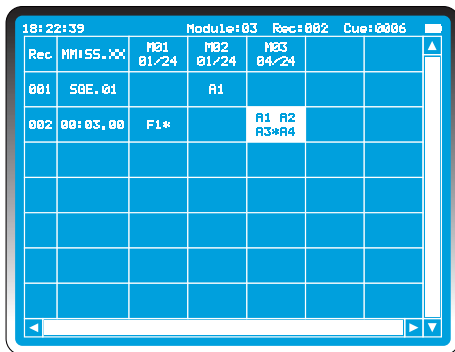
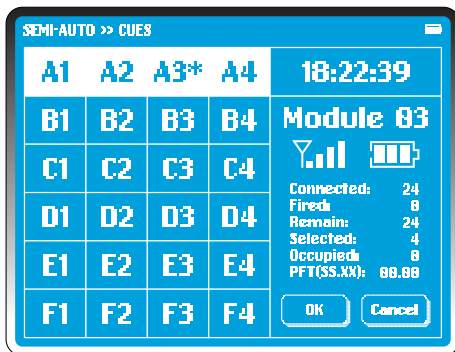
Touch **F1** instead of **A1**. Select **OK** to confirm and quit to **Script Screen**. **F1** is now displayed on Record 002, M01.

A1	A2	A3	A4	18:22:39
B1	B2	B3	B4	Module 01 Connected: 24 Fired: 0 Remain: 24 Selected: 1 Occupied: 0 PFT(SS,XX): 00.00
C1	C2	C3	C4	
D1	D2	D3	D4	
E1	E2	E3	E4	
F1	F2	F3	F4	

OK Cancel

Rec	MM:SS.XX	M01 01/24	M02 01/24	M03 00/24		
001	SSE.01		A1			
002	00:03.00	F1				

Multiple Entries



Select the grid where cues are to be edited then press **EDIT**.

In the example grid on record 002, M03 has been highlighted. The default cue of **A1** has been highlighted. The available cues for the module are displayed in the cue grid.

To fire multiple cues in one grid, with a cue highlighted press and hold and highlight up to 4 cues on any module for any record.

In the example **A1, A2, A3*** and **A4** have been selected.

Release button and select **OK** on the screen to return to the **Script Screen**.

Note: * after any cue represents a cue with a Prefire Time (see [Prefire Time](#)).

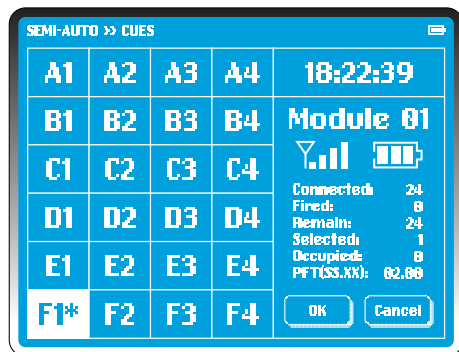
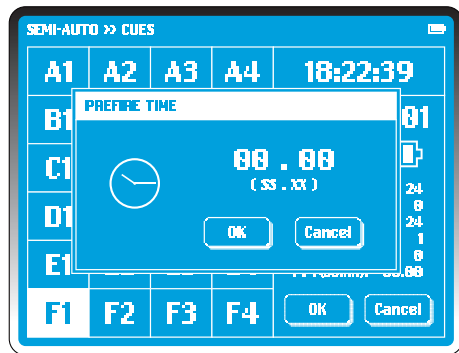
Prefire Time

In the cue grid, select any cue that contains a shell or similar to be fired prior to the bursting time. In the screen example it is **F1**.

Press **PLAY** on the key pad, the **PREFIRE TIME** dialog will be displayed. Select the time then enter the desired prefire time for your product using the numeric key pad. Select OK. A * superscript will appear beside that cue.

TIP: Prefire Time can be added to cues at any time on any module.

Select OK to return to the **Semi-Auto Script** Screen.



Changing Step Time


18:22:39 Module: 03 Rec: 007 Cue: 0018

Rec	MM:SS:XX	M01 05/24	M02 03/24	M03 10/24		
001	SGE. 01		A1			
002	SEG. 02		A2	B1		
003	00:12.00	C1		C1 D4		
004	00:13.00	C2		C2 D3		
005	00:14.00	C3		C3 D2		
006	00:15.00	C4		C4 D1		
007	SEG. 03	A2	A3	B2		

18:22:39 Module: 03 Rec: 007 Cue: 0018

Rec	MM:SS:XX	M01 05/24	M02 03/24	M03 10/24		
001	SGE. 01		A1			
002						
003						
004						
005						
006						
007	SEG. 03	A2	A3	B2		

STEP TIME

 **00.50**
(SS . XX)

OK Cancel

To change the Step Time, select the column 2 header **MM:SS:XX**. The **STEP TIME** dialog will then be displayed.

Select the time, the first “o” will flash on “01.00” (ss.xx). Amend using the numeric key pad. To confirm select **OK** or press **Cancel** if the change is no longer required.

Example:

Change step time to 00.50 (half second). So a preceding bursting time of 12 seconds (00:12:00) will be followed by 00:12:50.

TIP: For sequences set the step time to the required interval and enter the sequence cues over the required number of modules. Any record can be edited at a later time to add additional cues. However the bursting time of the records cannot be edited nor can new records be inserted.

Segment

Rec	MM:SS.WW	M01 01/24	M02 01/24	M03 04/24
001	SEG. 01		A1	
002	00:03.00	F1*		A1 A2 A3*A4
003	00:03.00			

Rec	MM:SS.WW	M01 02/24	M02 02/24	M03 05/24
001	SEG. 01		A1	
002	00:03.00	F1*		A1 A2 A3*A4
003	SEG. 02	A1	A2	B1
004	00:01.00			

Each Semi-Auto display can be divided into segments. Each segment will be fired separately. Segments can be fired in any order by highlighting the segment (see **Fire** in [Semi-Auto](#)).

With the Bursting Time highlighted in the appropriate record, press **EDIT** on the keypad. The time will flash. Using the keypad, return the counter to “00:00:00”, or press **EDIT** on the keypad followed by the **STOP** button to return the counter to “00:00.00”. To confirm, select a module to enter the first cue of the new record. The bursting time will display “Seg. 02”.

Each segment will commence with a “0” time value and record times in the segment will be “0 + step time” to give bursting times.

Segment numbering is generated automatically and 99 segments can be entered for each file. The maximum cue entries per record or file is 2376.

Deleting Entries

18:22:39 Module: 03 Rec: 000 Cue: 0024


Rec	MM:SS.XX	M01 07/24	M02 03/24	M03 14/24		
001	SEG. 01		A1			
002	00:03.00	F1*		A1 A2 A3+A4		
003	SEG. 02	A1	A2	B1		
004	00:12.00	C1		C1 D4		
005	00:13.00	C2		C2 D3		
006	00:14.00	C3		C3 D2		
007	00:15.00	C4		C4 D1		

18:22:39 Module: 03 Rec: 000 Cue: 0023

Rec	MM:SS.XX	M01 06/24	M02 03/24	M03 14/24		
001	SEG. 01		A1			
002	00:03.00	F1*		A1 A2 A3+A4		
003	SEG. 02		A2	B1		
004	00:12.00	C1		C1 D4		
005	00:13.00	C2		C2 D3		
006	00:14.00	C3		C3 D2		
007	00:15.00	C4		C4 D1		

Entries can be deleted at any time.

Example:

Highlight **A1** in Rec 003. To remove, use the **DELETE**  key on the keypad.

A1 in module 01 will now be available for re-selection.

To delete an entire record highlight the Bursting Time for the record and press **DELETE** on the key pad. This cannot be undone. The timing on the remaining records will not be affected. Cues that were allocated will now be available for re-selection.

NOTE:

The last cue on the record cannot be deleted.
Records cannot be inserted between two existing records.
The first record of a segment cannot be deleted.

If a segment is highlighted and the **DELETE** button pressed a pop-up warning will appear. Select **OK** to confirm or **CANCEL**.

TIP:

When it is necessary to scroll to a new page use the direction keys on the keypad.

Saving Firing Data

Press **ESCAPE** on the keypad at anytime before firing to quit the Semi-Auto function.



A **Save Firing Data** option will appear on the screen.

Select **No** to discard data and return to the **MAIN MENU**.

To save select **Yes**.

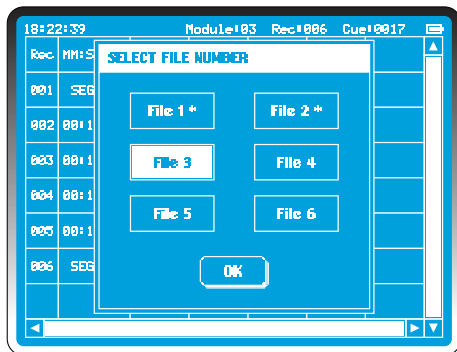
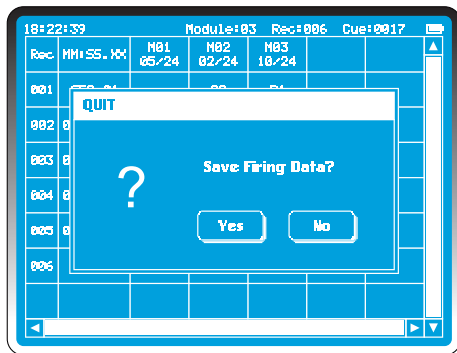
Up to 6 firing scripts can be saved.

Select File 1-6 and confirm by selecting **OK**.

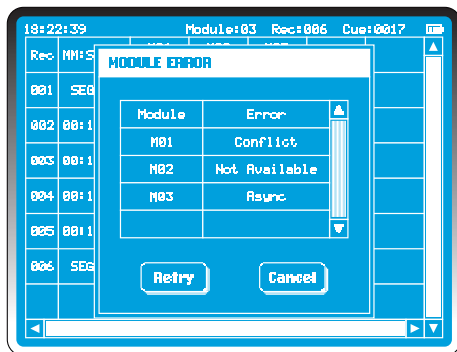
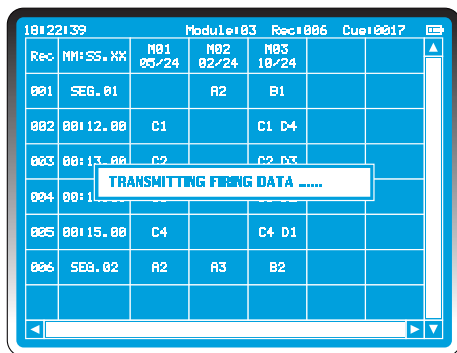
* denotes files with previously stored data. To overwrite such files, a further confirmation will be required.

NOTE:

Files cannot be downloaded from the controller to an external device.



Transmit Firing Data



To transmit a firing script press the **TRANSMIT** key on the keypad



The controller will communicate with all modules in the network, checking status, synchronizing clocks and transmitting firing data. Transmission will take from a few seconds to a few minutes depending on the number of modules. There are 3 errors which will cause a failure in firing data transmission:

Not Available:

No module in the network has been assigned this address or has not joined the network. It can take a few minutes for modules to join the network so wait a few moments before checking further. If this module has been used with other controllers it may be assigned to a different controller network. (See [Add Module](#) in **SETTINGS**).

Conflict:

More than 2 modules have the same module number.

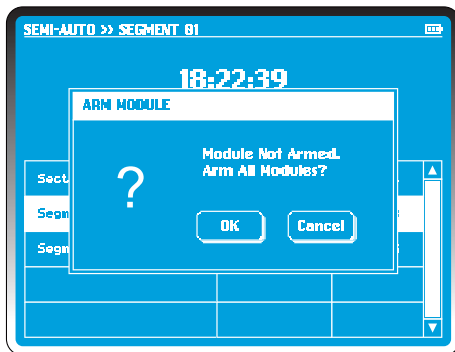
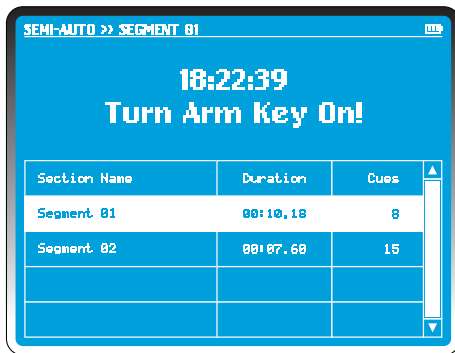
Async:

Failure to sync clocks.

NOTE:

The system will allow a low power warning in a module to be ignored but it is suggested that the batteries are replaced at this time. Using a quality branded rechargeable battery will give adequate notice of a low power issue.

Fire



Having transmitted firing data, if the ARM KEY is set to the **Off** position, the system prompts “Turn Arm Key On” in firing screen.



Turn ARM KEY to the **On** position.

The system checks the status of all the modules including available, conflict, time synchronization and battery level. Any error at this stage can be ignored or remedied.

If any unarmed module is detected, controller prompts “Arm Module”.

Input the Login code to confirm arming function. All intended modules will immediately flash to confirm arming sequence and capacitors will charge in 20 seconds. A progress bar will appear on the controller screen.

NOTE:

If the system has been sitting idle for a long period of time it is advisable to switch the arm key off and on to carry out a last minute verification of module status.

SEMI-AUTO >> SEGMENT 01

Duration 28% 00:02.00/00:10.10

Cues 12% 1/8

Section Name	Duration	Cues
Segment 01	00:10.10	8
Segment 02	00:07.60	15

SEMI-AUTO >> SEGMENT 02

18:22:39

Press Fire Button!

Section Name	Duration	Cues
Segment 01	00:10.10	8
Segment 02	00:07.60	15

The **FIRE** button will illuminate and **SEG 01** will be highlighted as the default segment. Select any segment to start the show as required.



Press the **FIRE** button to commence firing. Two progress bars will display the segment time and cue progress as a percentage of the segment.

When firing is complete, the system will highlight the next available segment and all fired segment are marked with a strike through. If it is the last segment, the system prompts “Turn Arm Key Off”.

Turn the arm key to the **Off** position to return to **MAIN MENU**.

Emergency Stop

SEMI-AUTO >> SEGMENT 01

Duration

20%

00:02:00/00:10:10

Cues

12%

1/8

PAUSE

Section Name	Duration	Cues
Segment 01	00:10:10	8
Segment 02	00:07:00	15

SEMI-AUTO >> SEGMENT 01

Duration

20%

00:02:00/00:10:10

Cues

12%

1/8

Press Fire Button!

Section Name	Duration	Cues
Segment 01	00:10:10	8
Segment 02	00:07:00	15

At any time the **EMERGENCY STOP** button can be pressed. This can pause the show. The system displays “pause” under the processing bar.



When the **EMERGENCY STOP** button is released, the system displays “Press Fire Button!”

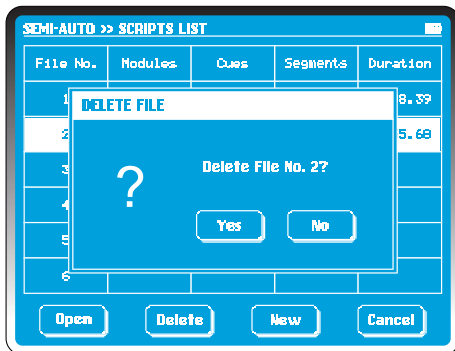
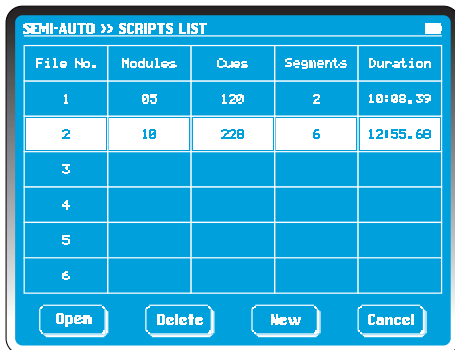
Press **FIRE** to continue the show or you can press **ESCAPE** to cancel the remainder of the show by discarding the firing data.



TIP:

You cannot save a fired script. A script designed prior to a display connected to modules must be saved before firing or the information cannot be stored.

Scripts List



If you opt to load a script from the controller at the beginning of Semi-Auto Firing, all saved scripts are displayed in the **Scripts List** and are saved in the controller. They are listed in the grid file number 1 to 6.

Information comprises:

total modules, cues, segments and duration.

If there is no content in a file, the grid remains empty.

To delete a File simply select the file grid to highlight it and select **Delete**.

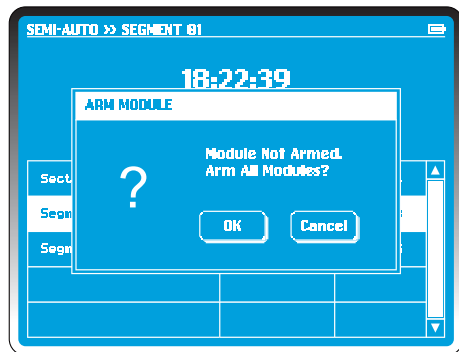
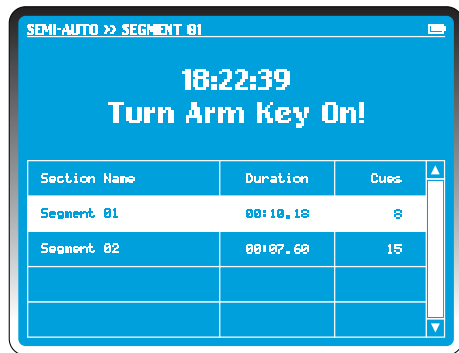
In the **Delete File** dialog box, select **Yes** to delete the file. **No** to return to **Scripts List** screen.

Select **New** to enter Semi-Auto Script Screen. It is not necessary for the controller to be connected to modules. The system assumes there are enough modules and cues connected. Enter the firing data and save for future use.

Select **Open** to access a saved script. The controller will seek the modules in the network and verify that the cues are available to fire.

TIP: To access saved files in a controller, highlight the file to be changed. File 2 in the screen example has been highlighted. Press EDIT on the keypad followed by the PLAY button. This will open the file.

Cue Fitting



PyroSure will communicate with the modules to check the loaded firing script against the real time information from all of the modules in the display. We describe this as the “fitting” process. As with any show set up there may be continuity errors, missing cues will be highlighted.

Check connections, cables etc.

When using Flat cable SSI or SFI the system will provide options for moving cues. Having not been connected as planned, options will be provided to re assign the cue.

Example:

In the examples **M03** is missing cue **B1**. **F4** is the only replacement option. Select **F4**. Touch **Replace**, then **M03-B1** disappears from screen. Fireworks connected to B1 should be moved to F4. The script is automatically adjusted with all timing data.

After all the checking and replacing, select **Skip**. The controller will ignore any remaining unresolved cues and display the script in Semi-Auto Script Screen.

NOTE:

You cannot edit the script after the cue fitting process.

Warning: Cue replacement should be noted and the module switched off before proceeding to move cues.

Project Firing



18:22:39 Module 12 Rec:066 Cue:0286

Rec	MM:SS.XX	M01 24/24	M02 24/24	M03 23/23	M04 24/24	M05 24/24
001	SEG. 01		A1		A1	A1
002	00:03.00	F1*		A1 A2 A3 A4		
003	00:06.00		A2	F1	F2	A2
004	00:09.66	C1		C1 D4		
005	00:10.66	C2		C2 D3		
006	00:11.66	C3		C3 D2		
007	00:12.66	C4		C4 D1		

Project Firing with PyroSure is accomplished only from saved files. Shows are designed on a PC and saved to a USB flash drive. These files may include MP3 music files.

PyroSure is currently compatible with Finale Fireworks and Qvix. Check our web site for other compatible software.

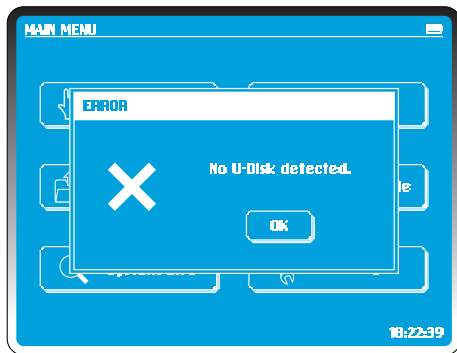
When considering what type of USB flash drive to use, please use named manufacturers and preferably those with LED indicators. Low quality drives may have incomplete format information and will not be recognised by the controller.

Remember do not leave anything to chance. Test the USB flash drive with a saved show.

Insert the drive into one of the two USB ports on the controller and select **Project** from the **Main Menu**.

If the USB cannot be found, leave the USB drive in the slot and restart the Controller. If at this stage the USB flash drive cannot be detected the drive is not compatible.

Projects List



Insert the flash drive into either of the two the controller USB ports. Wait for few seconds. Some USB sticks need a few seconds to run a start up program. Please wait until the LED indicator steadies then continue.

Select **Project** in **Main Menu**. If you select Project without a memory stick or the format is not recognized the Controller will display an error message.

The project list will include:

Project Name, Designer, Modules, Duration, Cues and Music.

The 1st project will be highlighted. Scroll up and down until the required project is found. Select the project. It will then be highlighted.

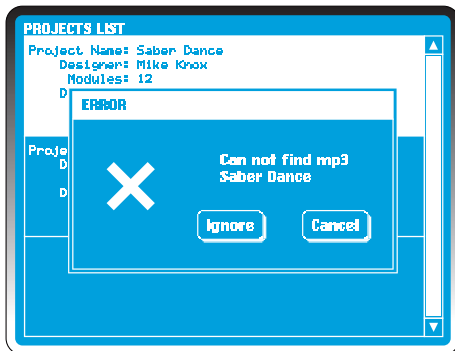
At any time the music can be played by pressing **PLAY** on the keypad. This is used to set the music level in the PA system. Press **STOP** to pause the music at any time. The show firing script and music will resume exactly where paused by releasing the stop button and pressing **FIRE**.



TIP: If the ampliification in the downloaded MP3 file is too high, it may distort the playback quality. Use a sound editing package to reduce peaks in the music.

The cable required is an unbalanced cable, stereo left and right or a mono jack to the PA.

Open Project



With the file highlighted press **EDIT** on the keypad.

If the controller cannot find the correct MP3 file on the USB flash drive, an **ERROR** dialog box will appear to highlight the missing file. Select **Ignore** to continue without music or **Cancel** to exit.

Check the file formats on the design software, ensure the file names match. When exporting a PyroSure script from Finale software, you must name the script identically to the MP3 file or rename the MP3 file by copying the exported script name.

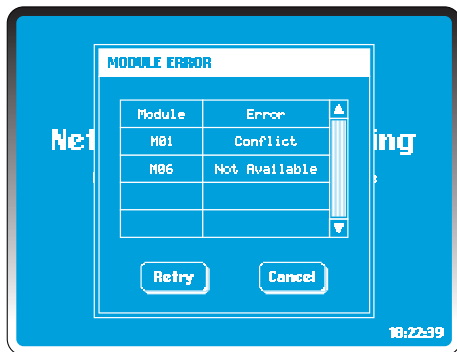
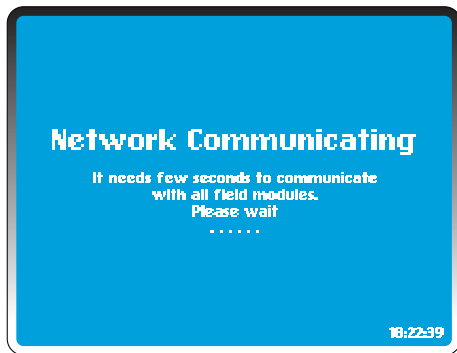
Example:

show007.mp3
show007.wyh

If a program offers an export option to convert the music into a .WAV file please ignore this option.

Use names with less than 12 characters. Do not include spaces. Do not change the extension of a WAV file to MP3 , the file type must be changed. When downloading a file into software to design a display, use an MP3 file.

Network Checking



The Controller checks all of the modules according to the project file data. The number of modules active and in the network must match or be greater than the modules required to fire a project (see [Total Modules](#) in **SETTINGS**).

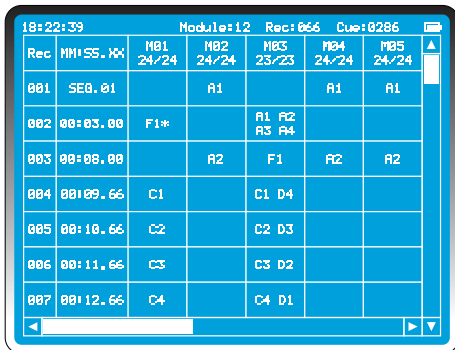
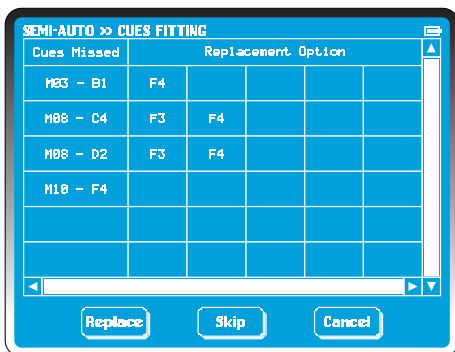
If any errors occur the following warnings may appear in the **ERROR** dialog box (all except the low power warning must be remedied):

Not Available: No module in the network has been assigned this address or has not joined the network. It can take a few minutes for modules to join the network so wait a few moments before checking further. A dialogue box may advise that the network is being rebuilt and a progress bar displayed. Check to ensure unavailable modules are switched on. If this module has been used with other controllers it may be assigned to a different controller network (see [Add Module](#) in **SETTINGS**).

Conflict: More than 2 modules have the same module number. If the total of the modules of the site is correct and a conflict is highlighted, there will also be a module shown as unavailable.

Low Power: Change the batteries. It may result in insufficient power to charge the capacitors.

Cue Fitting



Once changes have been made select **Retry** or **Cancel** to quit to **MAIN MENU**.

PyroSure will communicate with the modules to check the loaded firing script against the real time information from all of the modules in the display. We describe this as the “fitting” process. As with any show set up there may be continuity errors, missing cues will be highlighted.

Check connections, cables etc. Remember Rail 8 linked in parallel should be checked individually using any module.

Common errors:

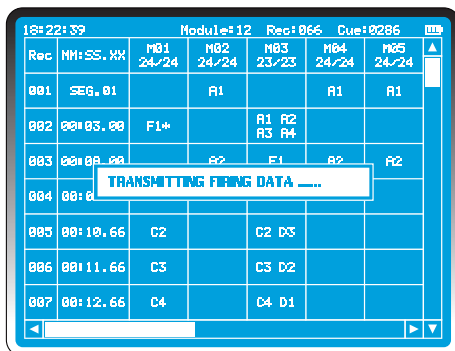
- Rail 8 cables crossed and connected to incorrect port in Module.
- Poor serial connections.
- Poor quality batteries.

The system will provide options for moving cues. This is essential when using flat cable SFI and SSI where an igniter in a group of 4 was previously fired. Having not been connected as planned, options will be provided to reassign the cue.

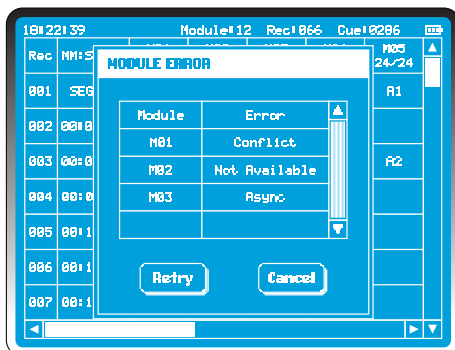
Example:

M03 is missing cue **B1**. **F4** is the only replacement option. Select **F4**. Select **Replace**, then **M03-B1** disappears from screen. Fireworks connected to **B1** should be moved to **F4**. The script is

Transmit Firing Script



Rec	MM:SS.XX	M01 24/24	M02 24/24	M03 23/23	M04 24/24	M05 24/24
001	SEG. 01		A1		A1	A1
002	00:03.00	F1+		A1 A3 A4		
003	00:08.00		A2	F1	A2	A2
004	00:08.00	TRANSMITTING FIRING DATA				
005	00:10.66	C2		C2 D3		
006	00:11.66	C3		C3 D2		
007	00:12.66	C4		C4 D1		



Rec	MM:SS.XX	M01 24/24	M02 24/24	M03 23/23	M04 24/24	M05 24/24
001	SEG. 01		A1		A1	A1
002	00:03.00	F1+		A1 A3 A4		
003	00:08.00		A2	F1	A2	A2
004	00:08.00	MODULE ERROR				
005	00:10.66	C2		C2 D3		
006	00:11.66	C3		C3 D2		
007	00:12.66	C4		C4 D1		

Module	Error
M01	Conflict
M02	Not Available
M03	Async

Retry Cancel

automatically adjusted with all timing data. After all the checking and replacing, select **Skip**. It will jump any remaining unresolved cues and display the script in Semi-Auto Script Screen.



To transmit a firing script press the **TRANSMIT** key on the keypad or the touch screen.

The controller will communicate with all modules in the network, checking status, synchronizing clocks and transmitting firing data. Transmission will take from a few seconds to a few minutes depending on the number of modules.

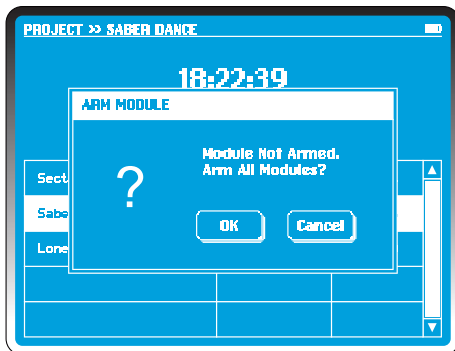
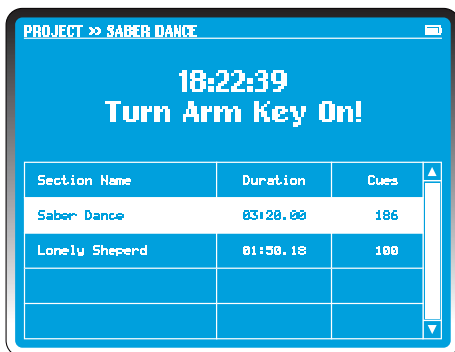
There are 3 errors which will cause a failure in firing script data transmission:

Not Available:

No module in the network has been assigned this address or has not joined the network. It can take a few minutes for modules to join the network so wait a few moments before checking further. If this module has been used with other controllers it may be assigned to a different controller network. (see [Add Module](#) in **SETTINGS**).

Conflict: More than 2 modules have the same module number.

Fire



Having transmitted firing data, if the ARM KEY is set to the **Off** position, the system prompts “Turn Arm Key On” in firing screen.



Turn ARM KEY to the **On** position.

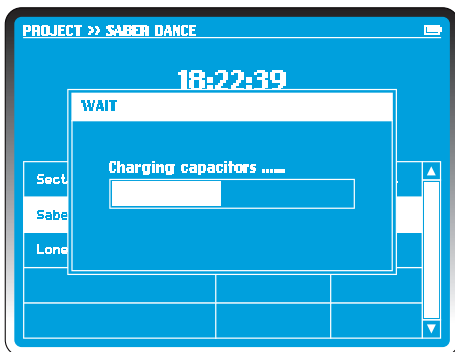
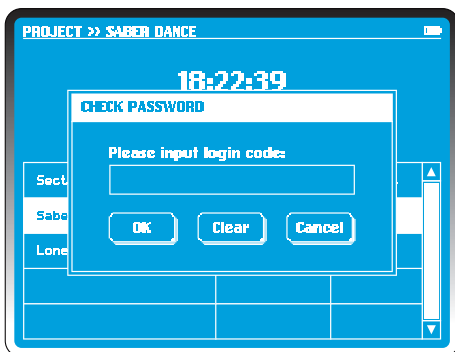
The system checks the status of all the modules including available, conflict, time synchronization and battery level. Any error at this stage can be ignored or remedied.

If any unarmed module is detected, controller prompts “Arm Module”.

Input the Login code to confirm arming function. All intended modules will immediately flash to confirm arming sequence and capacitors will charge in 20 seconds. A progress bar will appear on the controller screen.

NOTE:

If the system has been sitting idle for a long period of time it is advisable to switch the arm key off and on to carry out a last minute verification of module status.



Async: Failure to synchronize clocks.

Rectify any errors.

The **FIRE** button will illuminate and **SEG 01** will be highlighted as the default segment. Select the required segment to start the show as required.



Press the **FIRE** button to commence firing.

Any music file will be downloaded into the controller from the flash drive around 3.5 seconds.

The display will commence without further action.

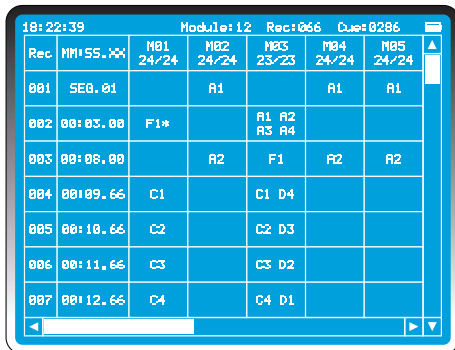
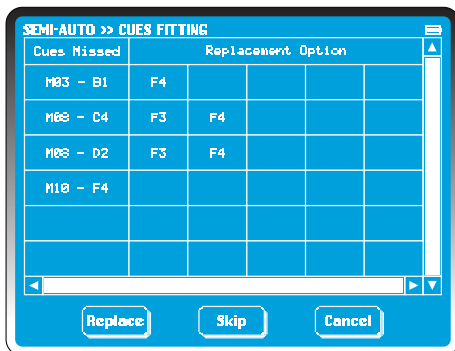
Two progress bars will display the segment time and cue progress as a percentage of the segment.

When firing is complete, the system will highlight the next available segment and all fired segment are marked with a strike through. If it is the last segment, the system prompts “Turn Arm Key Off”.

Turn the arm key to the **Off** position to return to **MAIN MENU**.

REMEMBER: Check all files before heading off to a display. If the controller cannot detect the USB, turn the controller off, insert the USB drive and restart. Carry a spare USB drive without music. If the controller cannot detect the music then use the USB without the music file. You will be given the option to fire without music.

Emergency Stop



At any time the **EMERGENCY STOP** button can be pressed. This can pause the show. The system displays “pause” under the processing bar.

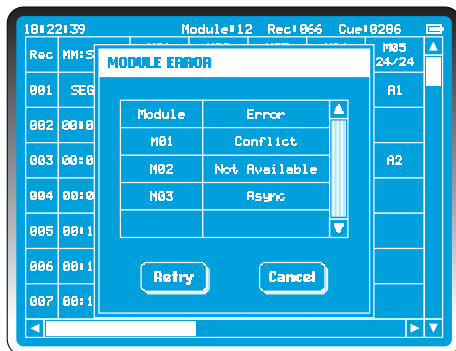
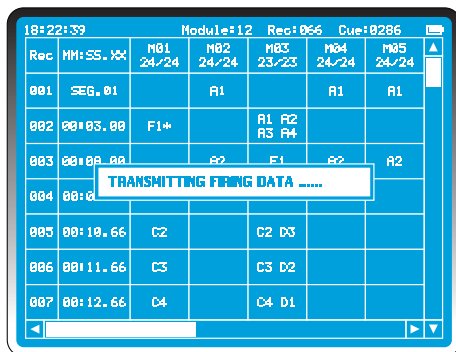


When the **EMERGENCY STOP** button is released, the system displays “Press Fire Button!”

Press **FIRE** to continue the show or you can press **ESCAPE** to cancel the remainder of the show by discarding the firing data.



Timed Fire



This is the function for one or several controllers to fire a display at a pre-determined time (see [Time Sync](#) function in **SETTINGS**.)

Timed Fire can only be used in **Project Firing**. It is off as a default setting. (See [Instant Fire/Timed Fire](#) in **SETTINGS**.)

If **Timed Fire** is on, after transmitting firing data to modules, two options are offered on the **Project Firing** screen.

Select **Timer**, the first digit will flash, enter the required time using the numeric keypad. Select OK to confirm the firing time.

NOTE:

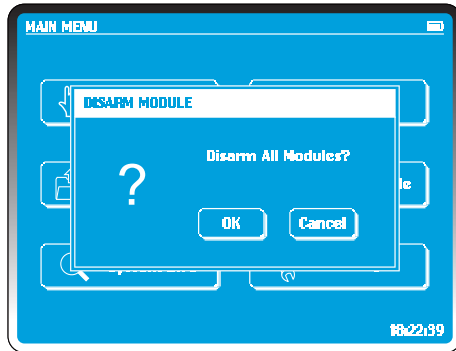
It is not possible to enter a Timed Fire less than one minute ahead of the system time or one hour before.

The Project Firing Screen displays **Current Time**, **Scheduled Time** and **Countdown to Firing**.

If the **Arm Key** is in the off position turn it on when ready and enter the login code to arm the modules.

The system prompts “Press Fire Button”. You must press **Fire** to send the firing command to the modules before the scheduled start time.

Disarm Module



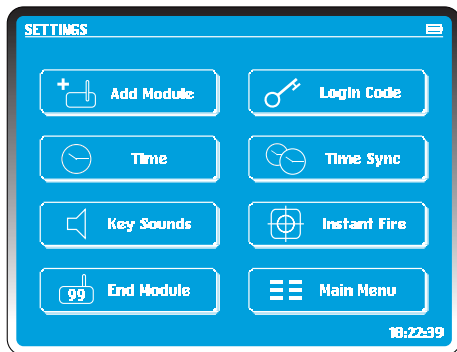
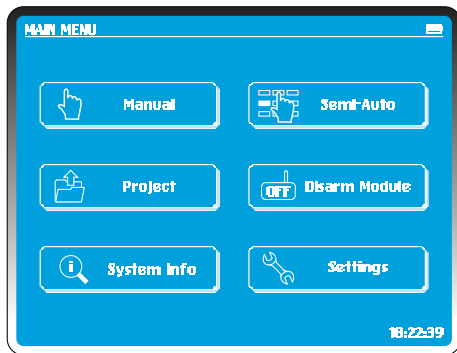
FIREWORKS SHOULD NOT BE CONNECTED TO A MODULE WHILE IT IS ACTIVE, MODULES SHOULD NOT BE APPROACHED WHEN ARMED.

Select **Disarm Modules** in **MAIN MENU**. Select **OK** to disarm or **Cancel** to return to **MAIN MENU**.

TIP:

Modules consume more power when armed.

Settings



Settings are selected from the **Main Menu**.

There are 8 options within settings:

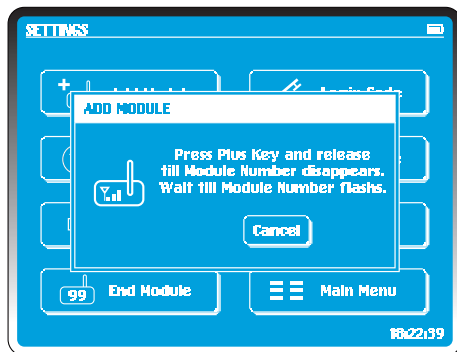
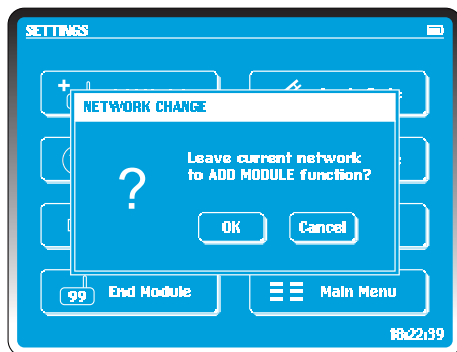
ADD MODULE
TIME
KEY SOUNDS
TOTAL MODULES

LOGIN KEY
TIME SYNC
FIRE MODE
MAIN MENU

The **ESCAPE** key can be used at any time to return to the **Main Menu**.



Add Module



The **Add Module** function is used to synchronise the Controller with all modules intended for a network. Every piece of hardware is encrypted and each network has an AES encrypted key. Only a module with the same network key can join a controller in an established network.

If you have more than one system or borrow modules from elsewhere you need to add the modules to the network.

In the **Settings** screen select **Add Module**. A confirmation screen will appear. Select **OK** or **Cancel**. You have the option to exit without changes by selecting **CANCEL**. To perform the network change select **OK**.

On every module to be added to the network, press and hold the **PLUS** key until the module address number disappears. Repeat with all new modules by switching on those to be added to network one at a time. Select **Confirm** to quit the settings screen. Restart the controller and any modules added to the network.

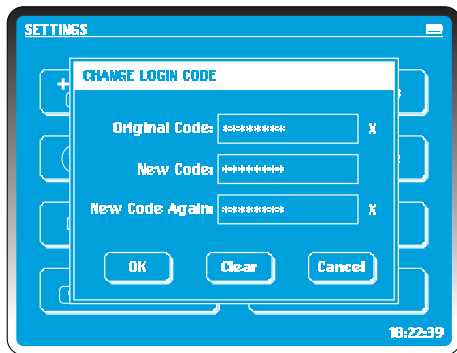


Setting up a network or adding modules to it may take a few minutes. Switch each module off and on in turn so all modules are aware immediately of the new network.

NOTE:

It is recommended that the new modules are added prior to setting out in the display site. Ensure the module has joined the network by checking the signal strength indicator. A module need only be added to a controller once.

Login Code



To change a login code, select **Login Code**.

Codes can be from 1 digit to 8.

Steps:

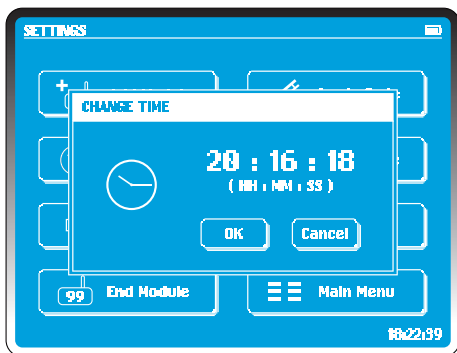
1. Enter the existing code
2. Select a new code and enter
3. Repeat the new code to confirm

If you make an error use the clear button to restart login change. To confirm change select **OK** or **Cancel** to revert to existing code and return to the **Settings** menu.

NOTE:

If the code is lost , you need to contact PyroSure.

Time



To set the internal time for the controller select **Time**.

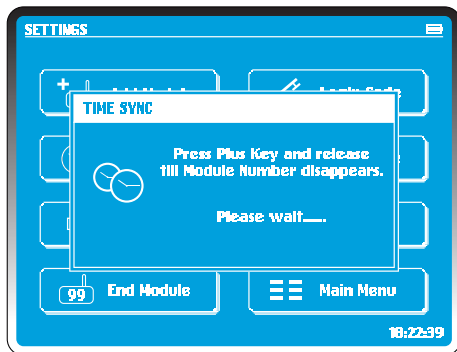
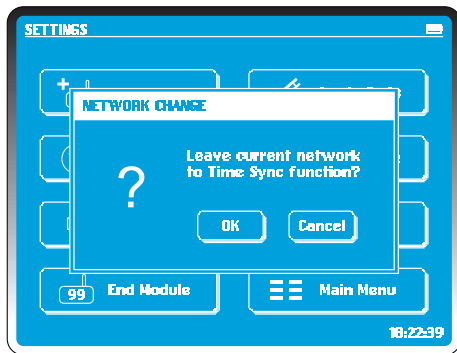
The time will be displayed on the screen in HH:MM:SS (24 hr).

To amend, touch the displayed time. The first H will flash, using the key pad select the desired time. As each numeral is entered the next required selection will flash. In the screen example to the left, 20 : 16 : 18 is selected.

To confirm select **OK** or **CANCEL** to make no changes.

Time settings are stored in a capacitor within the controller and will be stored for around 2 months while the system is idle. The correct time is critical if using TIMED FIRING (see [Fire Mode](#) in **Settings**).

Time Sync



Use **Time Sync** mode In order to perform large displays of more than 99 modules or to fire synchronized shows using multiple controllers.

Synchronization of controllers is performed through an existing network with the master controller. This can be any controller with at least one active module in a network. Check that the time on the controller is accurate.

In the **Main Menu** of the master controller, select **Manual Fire**. This will sync the module time with the controller.

Select **Time Sync** on the subsequent controller(s).

Select **OK**. The controller will establish a new network and display the message "**Please Wait...**" on the screen

When a cancel button is displayed press the **PLUS** key on the active module until the address number disappears .



After a few moments the controller will display the previous time and the new time. Select **OK** to complete the process.

Key Sounds

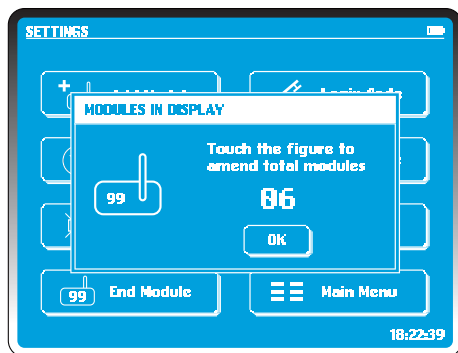
For indoor use or silent operation of the controller touch the **Key Sound** button. A cross will appear indicating silent mode. To re-activate sounds touch the button.

Instant Fire / Timed Fire

Timed Fire is for use only in project firing when a pre-determined start time is to be set either for a single controller or multiple controller (see [Timed Fire](#) in **Project Firing**).

Simply select the button to switch between the two modes.

Total Modules



This function is used to change the total number of modules in a display or network.

In any mode of firing, the number of modules selected must match the modules placed in the display. If 6 modules are to be used then “06” must be entered.

Remember, 01, 02, 03, 04, 05, 06 are all required for a display. It is not necessary to connect Pyro to every module but they must all be active.

It is not necessary to change the total modules in Project Firing. The firing script should match the number of modules in the display.

NOTE:

It is not necessary that every module in a network have connected cues. Additional modules may be used in areas of difficult reception to relay and boost signals.

In the event that a module becomes faulty during setup of a display, it can be replaced at any time. Enter the address into a spare module which was previously added to the PAN. The faulty module should be checked carefully before any subsequent use.

STATE OF THE ART PROFESSIONAL FIRING SYSTEM

Graphic design: starbit.co.uk