



## So, You Want to Write a Choreography...

Writing scripted choreographies for Firelinx modules is an easy process but it requires a bit of thinking and some knowledge on what is needed in order to ensure that the choreography plays out the way you have envisioned. There are two easy ways to generate a choreography for Firelinx. The first is to use professional grade scripting and choreography software, like Finale, that can export a file that the Firelinx Command Module (CM) can easily read. If you do not have a copy of Finale, that's okay! There is also a manual scripting form you can use; it just requires a little legwork.

Available on our website, [here](#) is a template file you can use, known as the Short Form Blank. It's a CSV file that can be opened in Excel or in a normal text editor. CSV is just a shorthand way of saying Comma Separated Values (CSV), meaning each value in an entry is separated by a comma. We'll look at this in more detail.

### The Short Form

If you open the Short Form in Excel, you'll see the following:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3							
4							
5							
6							

That's about it! There is a column for every piece of information that is needed by the Firelinx Command Module to shoot your choreography. Caliber and Description are not needed but can be used to add additional functionality to your choreography.

If you are viewing the Short Form through a text editor, you'd see the following:

```
ShortFormBlank.csv - Notepad
File Edit Format View Help
#FirelinxShortForm,,,,,
Script,Shot Time,Module,Pin,Caliber,Description
```



It has the same information, it's just a little harder to read. We'll show you examples in both the Excel view and the text editor as we continue.

## Concepts You Need to Understand

There are several distinct concepts that need to be understood before your choreography can come to life. These are the concepts of Script and Shot Time. Additionally, you need to know your Module and Pin numbers, and optionally the Caliber and Description.

### Scripts Explained

Think of your choreography not as a single show (though you can), but as a large play about to go on stage. This play of yours could have 1 Act, or it could have several. Just like a normal play, the show doesn't end after an Act, it simply pauses for a bit until the next one is ready – the actors on stage are still the same.

In a Choreography file, a single show can have several Scripts inside of it. If you only plan on choreographing one show from beginning to end, you only need 1 Script. But, if you would like to break your show into several Acts, you can make multiple Scripts within the same show file. After firing a Script, the CM will wait until you tell it to fire the next Script. This way, you can have your several-act show ready to go at a moment's notice. Scripts start at 1, and numerically increase from there. If you are only doing 1 show in your file, then they will all be Script 1.

For example, here's a short show with only 1 script:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	15	1	2			
5	1	20	1	3			
6	1	25	1	4			
7	1	30	1	5			
8							
9							



```

ShortFormBlank.csv - Notepad
File Edit Format View Help
#FirelinxShortForm,,,,,
Script,Shot Time,Module,Pin,Caliber,Description
1,10,1,1,,
1,15,1,2,,
1,20,1,3,,
1,25,1,4,,
1,30,1,5,,

```

Both of these shows above will fire 1 Script when you press the FIRE button and then be done after the show ends. If you wanted multiple Scripts in your show, it might look like this:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	15	1	2			
5	2	10	1	3			
6	3	10	1	4			
7	3	15	1	5			
8							
9							

In this case, the system would fire Script 1, the first 2 shots, after you press the FIRE button. The CM would then stop and wait for you to press the FIRE button again before firing Script 2, and so on.

### Shot Time Explained

The second concept is the Shot Time. This is the time the pyrotechnic device will be fired AFTER you press the FIRE button. Time 0, where the show starts at, is dependent on whether you are firing a SMPTE show, or an Internal show. For an Internal Show, Time 0 begins when you press the FIRE button. For a SMPTE show, Time 0 is wherever your SMPTE time code says it is.



Using our examples above, we can see how Shot Time works.

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	15	1	2			
5	1	20	1	3			
6	1	25	1	4			
7	1	30	1	5			
8							
9							

In this Script, the first pyrotechnic shot will fire at 10 seconds AFTER you press the FIRE button. The next shot will automatically fire at 15 seconds from when you pressed the FIRE button. This is not to be confused with it firing 15 seconds AFTER the first shot (it will fire 5 seconds after the first shot). Time keeps going up as you go through your choreography. Think of it as your day planner – you write down when things have to happen:

- 8:00 Breakfast
- 8:30 Walk the Dog
- 9:45 Call the Mother-in-Law

These things are written based on time, not the amount of time BETWEEN them. Now remember, all the times are based on when you press the FIRE button, so for a show with multiple Scripts:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	15	1	2			
5	2	10	1	3			
6	3	10	1	4			
7	3	15	1	5			
8							
9							

In this case, the first 2 shots will fire at 10 seconds and 15 seconds after you press the FIRE button. But remember, the CM will stop and wait after a Script is fired for you to start the next one. So, Script 2 will begin firing 10 seconds after you press the FIRE button the second time, it's



not based on the first time you pressed it. Time 0, and thus your Shot Time, restarts every time you press the FIRE button for a Script.

Also, of note, is how you should write Shot Time. It can be in seconds, as shown above, but it can also be expanded upon to make things easier. For instance, writing 120 in Shot Time means 2 minutes, but you could also write 2:00. So, if you want a shot at the 1-hour mark, you'd write 1:00:00. Maybe you want something faster? Why not shoot at 25 milliseconds (0.025)? Why not jazz it up and combine all 3 and fire a shot at 1 hour, 3 minutes, 42 seconds and 690 milliseconds (1:03:42.690)? All of those are legal.

While you can easily fire at a time of 0 seconds (the moment you press the FIRE button), it is always advisable to include a certain amount of pre-roll to ensure the system fires properly. Firing at time 0 can work, but there are greater chances of it being slightly delayed due to needing to get the message out to the module. If you are firing a choreography, a pre-roll of at least 30 seconds is always advisable.

### Module and Pin Numbers Explained

The Module and Pin Numbers are fairly straightforward. Module is the name of the Firing Module (FM) you want to fire. These range from 1 to 999. On the FM itself, you can specify its name by going through the Menu. Remember, only 1 module can have a name at a time per Command Module, meaning you can have module 001 and 002, but not 2 module 001s connected to the same CM. Additionally, when writing your choreography, you do not need to include the leading 0s (001 and 1 are the same).

Pin Numbers are the Pin you want to fire when this time event occurs. So, in our above example, the first shot at 10 seconds after the FIRE button is pressed will fire Module 1, Pin 1. If you want multiple pins to fire at a single time, you MUST make a new entry for each pin! For instance:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1,2,3			
4	1	15	1	4			
5							
6							

This is illegal! The system will not understand this properly and you may have some nasty surprises if you attempt to shoot it.



If you wanted to fire pins 1, 2, and 3 all at 10 seconds, you would do this instead:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	10	1	2			
5	1	10	1	3			
6	1	15	1	4			
7							
8							

That will do exactly what you wanted it to do! The same rule goes for multiple modules firing at the same time, each one needs to be on its own line.

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1			
4	1	10	1	2			
5	1	10	2	1			
6	1	10	2	2			
7							
8							
9							

### Caliber Explained

The term Caliber is a throwback to the olden days when some systems used the Caliber of a shell for safety disables. It can still be used this way, but the name is closer to meaning a Disable than a Caliber. When choreographing a show, you may run into the scenario where you are firing, say, a lot of 4” shells, but then you have some 8” shells you’d also like to fire off. However, if the wind were to get too high, you’d want to disable the 8” shells, but let the rest of the show continue. In this case, you simply enter a name into the Caliber field to make a new entry in the Disables list. How to use Disables is covered in the rest of the user manual. All you need to know is that if you want multiple shots to be disabled under your command, you simply need to write a name in the Caliber field and use the same name for each additional shot that would be included. Example time!



	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1	3"		
4	1	10	1	2	Red		
5	1	10	2	1			
6	1	10	2	2	Red		
7	1	15	2	3	4"		
8	1	20	3	1	4"		

In the above script, we have created 3 different disable Calibers and named them as 3", Red, and 4". You can see that they span multiple time frames and multiple modules, which is fine. During the show, if you decide to disable anything with the Red name, any shot in your choreography that has Red in its Caliber field will NOT shoot until you re-enable it. Also, a shot can only be assigned to a single Caliber at a time. Thought must be given into how you want the disable system to function when you are in a scenario where you would like a shot to belong to 2 Caliber groups at once – a shot can only belong to one group at a time. The Caliber name you select should not be longer than 11 characters. Anything longer will be trimmed to meet that maximum length. Additionally, you cannot put a comma (,) in your Caliber name.

### Description Explained

A Description on an event is an easy way for you to see what you are doing when inside a choreography as you write it. Additionally, while firing the show, you can view the description of upcoming shots on a Tablet attached to the CM in future revisions. The Description can be whatever you want it to be, but it cannot include commas, and will be truncated to a maximum length of 43 characters. It can be longer than that in your choreography file, but it will be truncated to that length when viewed on the CM. An example:

	A	B	C	D	E	F	G
1	#FirelinxShortForm						
2	Script	Shot Time	Module	Pin	Caliber	Description	
3	1	10	1	1	3"	White Peony	
4	1	10	1	2	Red	Red Mine	
5	1	10	2	1		Blue Mine	
6	1	10	2	2	Red	Green Mine	
7	1	15	2	3	4"	Left Mortar	
8	1	20	3	1	4"	Right Mortar	
9							



And another view of the text editor version:

```
*ShortFormBlank.csv - Notepad
File Edit Format View Help
#FirelinxShortForm,,,,,
Script,Shot Time,Module,Pin,Caliber,Description
1,10,1,1,3",White Peony
1,10,1,2,Red,Red Mine
1,10,2,1,,Blue Mine
1,10,2,2,Red,Green Mine
1,15,2,3,4",Left Mortar
1,20,3,1,4",Right Mortar
|
```

## The Rules

Yes, there are always rules, but these are needed to ensure the show happens the way you have it in your mind.

### Rule 1: Scripts Must be in Order

Scripts must go in ascending order, from Script 1 to Script however high you want to go. You cannot go from Script 1, to Script 2, then back to 1 inside your choreography file. Not only would that be extremely hard to read for someone else looking at your choreography, but it would also be equally hard to try and fix it for you on the fly!

### Rule 2: Scripts Cannot Have Holes

Similar to Rule 1, you cannot go from Script 1 to Script 3, skipping Script 2. Each Script must be in ascending order without gaps.

### Rule 3: Time Must be in Ascending Order

Similar to the first 2 rules, your Shot Time must be in ascending order. You cannot script a shot at 10 seconds, then at 5 seconds, then at 20 seconds – that would never fire properly! You must write the choreography in ascending time, just like Scripts. We suggest using Finale for writing choreographies because it does this all for you!

### Rule 4: Don't Sweat the Small Stuff

When it comes to Module and Pin, the order you place them in does not matter, as long as Rules 1-3 are followed. Ensure you have the correct Module and Pin assigned to a shot, but don't worry about the order when you are firing multiple shots at the same time. Additionally, Caliber and Description do not have to be used, but are there to help you if you wish to use them.



## Conclusion

In the end, if you follow the above rules, and give some thought on how you want to choreograph your show, it can be a lengthy task with a beautiful result at the end. In most cases, if you make a mistake, the CM will attempt to fix the problem for you. If it cannot do that, it will not allow you to load the show. We highly recommend scripting your show and then firing it with test LEDs (available in the online [shop](#)) to verify that what you imagined is what occurs. Remember, when you tell a unit to fire a shell, the time you put in is the time it will fire at – consider that mortar shells take time to get into the air before they burst! Using professional scripting software, like Finale, is a great way to achieve your results quickly, but it is not the only way to do it.