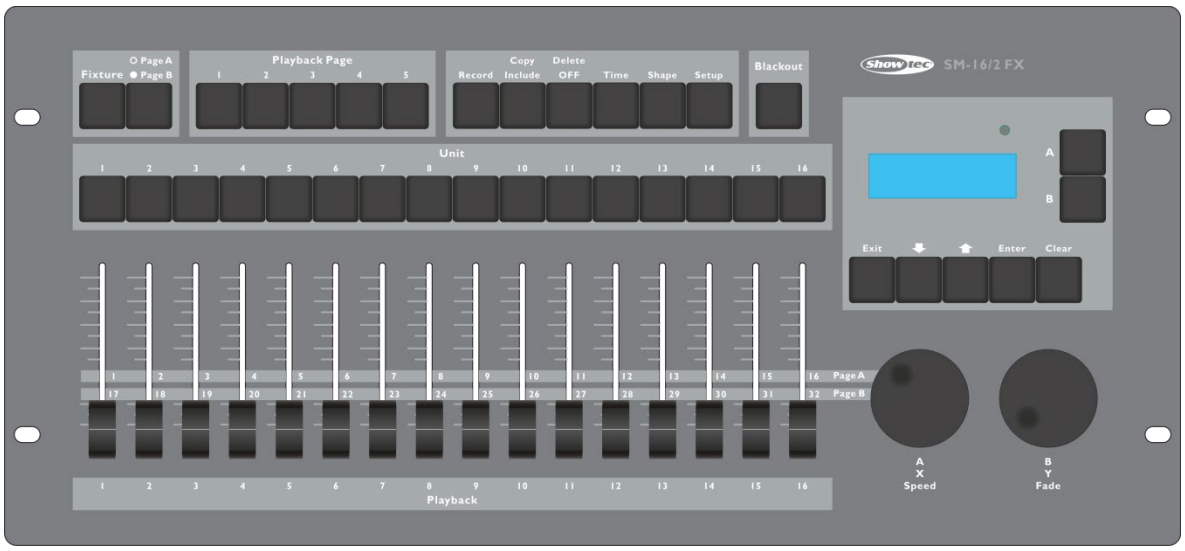
MANUAL



ENGLISH

SM-16/2 FX V1

Product code: 50702

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Overview

The SM-16/2 FX DMX controller can control 16 fixtures simultaneously. It is equipped with built-in shape effects of pan/tilt circle, RGB rainbow and varieties of chases etc. Also 16 playbacks and 10 built-in shapes can be output simultaneously. Faders can be used to output scenes, chases, shapes and adjust the intensity of the dimmer channels in the chases.

Specifications

DMX512 channel numbers	512
Fixture	16
Channels for each fixture	32
Playback	80
Playback to run simultaneously	16
Total Chase steps	100
Time control of Scenes	HTP, LTP
Shapes for each Scene	2
Scene and dimmer by slider	Yes
Flash Scene	Yes
Shape generator	Shapes of Dimmer, Pan/Tilt, RGB and Color
Shapes to run simultaneously	10
Real time blackout	Yes
X/Y value by wheel	Yes
Chase speed by wheel	Yes
Dimmer by slider	Yes
USB Memory	FAT32 supported

Installation

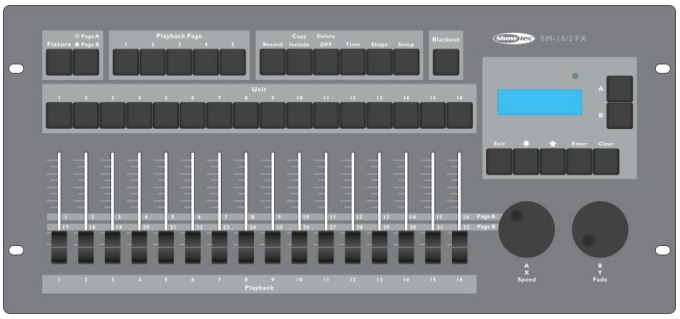
For your own safety, please read this user manual carefully before your initial start-up!

Unpacking Instructions

Immediately upon receiving this product, carefully unpack the carton and check the contents to ensure that all parts are present, and have been received in good condition. Notify the dealer immediately and retain packing material for inspection if any parts appear damaged from shipping or the carton itself shows signs of mishandling. Save the carton and all packing materials. In the event that a fixture must be returned to the factory, it is important that the fixture be returned in the original factory box and packing.

Your shipment includes:

- Showtec SM-16/2 FX
- IEC Power cable 1,5 m
- Manual



Optional Accessories:

- D7401 Flight case

Safety instructions

CAUTION!
Keep this device away from rain and moisture!
Unplug mains lead before opening the housing!

Every person involved with the installation, operation and maintenance of this device has to:

- be qualified
- follow the instructions of this manual

CAUTION! Be careful with your operations.
With a dangerous voltage you can suffer
a dangerous electric shock when touching the wires!

Before your initial start-up, please make sure that there is no damage caused by transportation. Should there be any, consult your dealer and do not use the device.

To maintain perfect condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this manual.

Please consider that damages caused by manual modifications to the device are not subject to warranty. This device contains no user-serviceable parts. Refer servicing to qualified technicians only.

IMPORTANT:

The manufacturer will not accept liability for any resulting damages caused by the non-observance of this manual or any unauthorized modification to the device.

- Never let the power-cord come into contact with other cables! Handle the power-cord and all connections with the mains with particular caution!
- Never remove warning or informative labels from the unit.
- Do not open the device and do not modify the device.
- Never use anything to cover the ground contact.
- Never leave any cables lying around.
- Do not insert objects into air vents.
- Do not connect this device to a dimmer pack.
- Do not switch the device on and off in short intervals, as this would reduce the device's life.
- Do not shake the device. Avoid brute force when installing or operating the device. Never use the device during thunderstorms, unplug the device immediately.
- Only use device indoor, avoid contact with water or other liquids.
- Do not touch the device's housing bare-handed during its operation (housing becomes hot).
- Only operate the device after having familiarized with its functions.
- Avoid flames and do not put close to flammable liquids or gases.
- Always keep case closed while operating.
- Always allow free air space of at least 50 cm around the unit for ventilation.
- Always disconnect power from the mains, when device is not used or before cleaning! Only handle the power-cord by the plug. Never pull out the plug by tugging the power-cord.
- Make sure that the device is not exposed to extreme heat, moisture or dust.
- Make sure that the available voltage is not higher than stated on the rear panel.
- Make sure that the power-cord is never crimped or damaged. Check the device and the power-cord from time to time.
- If the external cable is damaged, it has to be replaced by a qualified technician.
- If the glass is obviously damaged, it has to be replaced. So that its functions are not impaired, due to cracks or deep scratches.
- If device is dropped or struck, disconnect mains power supply immediately. Have a qualified engineer inspect for safety before operating.
- If the device has been exposed to drastic temperature fluctuation (e.g. after transportation), do not switch it on immediately. The arising condensation water might damage your device. Leave the device switched off until it has reached room temperature.
- If your Showtec device fails to work properly, discontinue use immediately. Pack the unit securely (preferably in the original packing material), and return it to your Showtec dealer for service.
- For adult use only. Light effect must be installed out of the reach of children. Never leave the unit running unattended.
- For replacement use fuses of same type and rating only.
- Allow time to cool down, before replacing lamp.
- The user is responsible for correct positioning and operating of the SM-16/2 FX. The manufacturer will not accept liability for damages caused by the misuse or incorrect installation of this device.
- This device falls under protection class I. Therefore it is essential to connect the yellow/green conductor to earth.
- During the initial start-up some smoke or smell may arise. This is a normal process and does not necessarily mean that the device is defective.
- Repairs, servicing and electric connection must be carried out by a qualified technician.
- WARRANTY: Till one year after date of purchase.

Operating Determinations

- This device is not designed for permanent operation. Consistent operation breaks will ensure that the device will serve you for a long time without defects.
- The maximum ambient temperature ta = 45°C must never be exceeded.
- The relative humidity must not exceed 50 % with an ambient temperature of 45° C.
- If this device is operated in any other way, than the one described in this manual, the product may suffer damages and the warranty becomes void.
- Any other operation may lead to dangers like short-circuit, burns, electric shock, crash etc.

You endanger your own safety and the safety of others!

Improper installation can cause serious damage to people and property !

Connection with the mains

Connect the device to the mains with the power-plug.
Always pay attention, that the right color cable is connected to the right place.

International	EU Cable	UK Cable	US Cable	Pin
L	BROWN	RED	YELLOW/COPPER	PHASE
N	BLUE	BLACK	SILVER	NEUTRAL
⏚	YELLOW/GREEN	GREEN	GREEN	PROTECTIVE GROUND

Make sure that the device is always connected properly to the earth!

Improper installation can cause serious damage to people and property!

Return Procedure

Returned merchandise must be sent prepaid and in the original packing, call tags will not be issued. Package must be clearly labeled with a Return Authorization Number (RMA number). Products returned without an RMA number will be refused. Highlite will not accept the returned goods or any responsibility. Call Highlite 0031-455667723 or mail aftersales@highlite.com and request an RMA prior to shipping the fixture. Be prepared to provide the model number, serial number and a brief description of the cause for the return. Be sure to properly pack fixture, any shipping damage resulting from inadequate packaging is the customer's responsibility. Highlite reserves the right to use its own discretion to repair or replace product(s). As a suggestion, proper UPS packing or double-boxing is always a safe method to use.

Note: If you are given an RMA number, please include the following information on a piece of paper inside the box:

01) Your name
02) Your address
03) Your phone number
04) A brief description of the symptoms

Claims

The client has the obligation to check the delivered goods immediately upon delivery for any short-comings and/or visible defects, or perform this check after our announcement that the goods are at their disposal. Damage incurred in shipping is the responsibility of the shipper; therefore the damage must be reported to the carrier upon receipt of merchandise.

It is the customer's responsibility to notify and submit claims with the shipper in the event that a fixture is damaged due to shipping. Transportation damage has to be reported to us within one day after receipt of the delivery.

Any return shipment has to be made post-paid at all times. Return shipments must be accompanied with a letter defining the reason for return shipment. Non-prepaid return shipments will be refused, unless otherwise agreed in writing.

Complaints against us must be made known in writing or by fax within 10 working days after receipt of the invoice. After this period complaints will not be handled anymore.

Complaints will only then be considered if the client has so far complied with all parts of the agreement, regardless of the agreement of which the obligation is resulting.

Description of the device

Features

The 50702 SM-16/2 FX is a light controller from Showtec.

- Intelligent light DMX controller
- 512 DMX512 channel numbers
- Patchable channels for each fixture
- Ready-to-use Shape Engine
- Show backup on USB flash drive (FAT32 supported)
- Power Supply: 230VAC (50Hz)
- Fixtures: 16 (each 32 channels)
- 16 Playbacks to run simultaneously
- HTP and LTP Time control of Scenes
- 2 Shapes for each Scene
- Operate scene, chase and dimmer by fader
- Flash scene
- Shape generator (shapes of Dimmer, Pan/Tilt, RGB and Color)
- 10 Shapes to run simultaneously
- Real time blackout
- X/Y value by wheel
- Chase speed by wheel
- Scenes: 80 (5 banks)
- Chases: 80 (5 banks)
- Total Chase Steps: 100
- Run mode: Auto, Manual
- Patch mode: Each fixture free assignable channels
- Output: DMX-512 standard
- Output connector: 3 and 5 pole XLR female
- Dimensions: 483 x 220 x 75 mm (LxWxH)
- Weight: 3,8 kg

Front panel

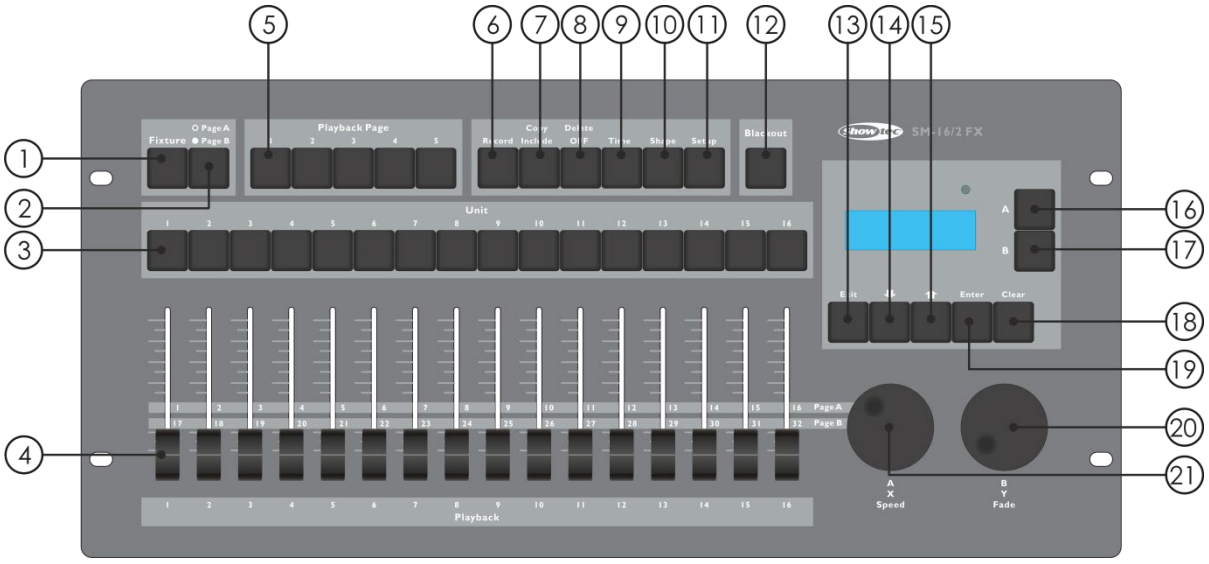


Fig. 01

01) Fixture button: When the indicator <Fixture> lights up, you can control the fixtures 1-16 with the Unit Buttons.
02) Channel page: To select page 1 (channel 1-16) or page 2 (channel 17-32). Indicator lights up when on page 2.
03) Unit buttons: To select the fixtures or playbacks. The indicator <Fixture> lights up on the selected fixtures or playbacks. The Unit buttons are also used for programming a scene or chase.

04) Channel or playback Faders: To control the different channels with the faders. When the indicator of a scene or a chase button is on, the faders are used to control the playback.
05) Playback page: When the indicator of a playback page button is on, the unit buttons are used to control the playback. The playback page buttons are also used to page up/down the playbacks.
06) Record: With this button you can record a shape, scene or chase.
07) Copy/include: With the Copy/include function you are able to load selected parts of a scene back into the programmer, copy a scene or copy a step from a chase.
08) Delete/ OFF: This button is used to delete a selected shape, scene or chase. The button is also used to leave out a selected fixture or channel out of the programmer.
09) Time: With this menu button you can set a fade in time for a scene or the global time of chase.
10) Shape: With this button you can control shapes of a fixture. Note: fixtures must be patched first.
11) Setup: To control several functions such as patch, language selection, data back-up, wipe and loading and system information.
12) Blackout: With this button you are able to blackout the whole console. When <Blackout> is active the indicator will keep flashing.
13) Exit: If you press this button you are able to exit every option of the controller.
14) Page down: Press this button for scrolling down in several menu functions.
15) Page up: Press this button for scrolling up in several menu functions.
16) Menu operation Button A: With this button you can choose for several menu functions of the controller. The display next to the buttons shows what each button will do.
17) Menu operation Button B: With this button you can choose for several menu functions of the controller. The display next to the buttons shows what each button will do.
18) Clear: With this button you are able to deselect fixtures, all fixtures are cleared from the programmer. The parameters of the chosen channels, that can be seen in the display, will be deselected. All HTP-channel values will be set to 000.
19) Enter: This button you will need for confirming several menu options.
20) Jogwheel A: With this wheel you are able to set several functions of the menu operation button A. Jogwheel A will operate the pan function of patched fixtures. Also this jogwheel is needed for setting the speed of a chase. Finally you have to use this wheel to adjust the patch options.
21) Jogwheel B: With this wheel you are able to set several functions of the menu operation button B. Jogwheel B will operate the tilt function of patched fixtures Also this jogwheel is needed to adjust the channel number of the fixture and to set the fade in of the scene. Finally you have to use this wheel to adjust the patch options.

Back panel

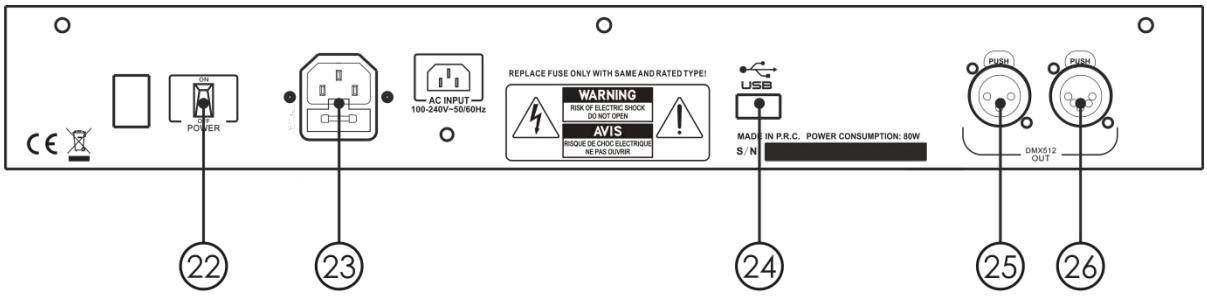


Fig. 02

22) Power switch ON/OFF
23) IEC power connector
24) USB input
25) DMX signal connector (OUT) 3-pin
26) DMX signal connector (OUT) 5-pin

Glossary

- Scene: The data of a stage scene that is saved in a playback.
- Chase: The data of a series of scenes that are saved in a playback.
- HTP: The type of the channels with the highest output (highest takes precedence), normally for dimmer channels.
- LTP: The type of the channels with the latest output (latest takes precedence), for non-dimmer channels.
- Fade in: The intensity of the light changes from dark to brightest.
- Fade out: The intensity of the light changes from bright to darkest.
- Record by fixture: This is the normal mode of the Showtec SM-16/2 FX. It means that when you record a scene, all attributes of each fixture you have selected are recorded in the scene. So, if you change only the position of a fixture, the color, gobo, intensity and all other attributes of that fixture, those are recorded as well. This is useful because you know that when you recall the scene, it will look exactly as it did when you saved it. However, it can be slightly inflexible, if you want to combine scenes.
- Record by channel: This means that only attributes you have changed are recorded in the scene. So, if you change the position of a fixture, only the position is recorded. When you recall the scene, the color, gobo, etc, will remain the same from the last setting. This means you can use a scene to change the position of some fixtures while the color from a previous scene is the same.
  This means that you will get more variety when you are running a show. It is a powerful feature, but you can easily make a mistake with this feature. So you have to be sure which attributes you need to record and which you won't. When you're learning, it's good to have some scenes "recorded by fixture" which turn on the fixtures in a known state. After this you can make some color scenes, by modifying just the color, or some gobo scenes to set the gobo, or change other attributes.

Patching

The SM-16/2 FX can operate fixtures directly without patching. The default channel number is 16 for each fixture. However, if the fixtures are patched, you can use the built-in shape engine.

Patch Fixture

01) Activate <Fixture>
02) Press <Setup> in the initial menu.
03) Press <A>.
04) Adjust the channel number with <Wheel B> to match the connected fixture.
05) Select a fixture. Load the channel information of the selected fixture into the patch menu by using wheel A and wheel B.
06) Press <Up>/<Down> in the menu operation area to browse the available channels. Select a desired option with button A or B and use <Wheel A> and/or <Wheel B> to modify the channel type.
07) Press <Enter> to save.
08) Go to step 4 for patching other fixtures or press two times <Exit> to leave the menu.

View the patching

Activate <Fixture> and press and hold a Unit Button, it will show the address code and the channel number of the fixture.

Controlling fixtures

Selecting fixtures for control

Use the Unit buttons to select the fixtures you want to control. You can select fixtures individually, or several at once.

01) Activate <Fixture> and press the desired Unit buttons. When a fixture is selected, the indicator lights up.
02) To select a range of fixtures in a row, hold down the Unit button for the first fixture. Then press the Unit button for the last fixture.
03) To select a range of fixtures at random you can select these by pressing the Unit buttons in the desired order.

Here are some other things to know:

- You can deselect a fixture by pressing the Unit button again.
- Once you have changed any channel of a fixture, pressing a Unit button will deselect all fixtures.

Changing channel values of the selected fixtures

To change the channel values of the fixture you have to follow the instructions below.

01) After selecting the fixtures, move the desired channel fader.
02) If pan/tilt are assigned to the Wheels (when fixture is patched), you can use <Wheel A/B> to control the pan/tilt of the fixtures.
03) Repeat Step 1 to change another channel.

When <Fixture> is activated, in the initial menu, press <Up>/<Down> in the menu operation area, you can view the channel value and status. A highlighted value means the channel has been edited and is activated in the Programmer.

Off function

If you push up a wrong channel or a wrong fixture, you can cancel it from the Programmer.

01) Activate <Fixture> and press the Unit button you want to cancel.
02) Press <Delete/OFF> to enter the menu.
03) Press <A> [Off selected fixture] to cancel all the data of the selected fixture.
04) Press <B> [Off channel] to cancel the data of a channel. At this time, the Unit buttons of the edited channels will keep flashing, while the buttons of the unedited channels will be off. Press the desired Unit button to cancel its editing.

Shapes

A shape is simply a sequence of values which can be applied to any attribute of a fixture. A "circle" shape, for example, applied to the pan and tilt attributes, would cause the fixture to move its beam around in a circular pattern. You can set the centre point of the circle, the size of the circle and the speed of the circle movement. The shapes are defined for particular attributes such as pan/tilt, dimmer, RGB and color. Some shapes will not work with some fixtures. A rainbow effect, for example, can only be applied to LED fixtures or CMY fixtures.
When you use a shape with more than one fixture, you can choose to either apply the shape identically to all the fixtures, or offset them so that the shape runs along the fixtures creating "wave" or "ballyhoo" type effects. This is called the spread of the shape.

Use shapes

When you choose a shape, it will be applied to all selected fixtures.
01) Select the fixtures the shape is to be applied to.
02) In the initial menu, press <Shape>.
03) Press <A> [Playback a Shape].
04) Select a shape type: Pan/Tilt shape, dimmer shape, RGB shape or Color shape.
05) Press <Up>/<Down> to browse and confirm with <A> or < B>.

- Most shapes are based on the current settings of the fixture, so a circle will move around the current pan-tilt position of the fixture.
- You can change the base value of a shape (e.g. the centre of a circle) by changing the channels. This can be accomplished by using the faders in the usual way. You can reduce the size to 0 (see next section) so you can see what the base value actually is.
- You can run up to 2 shapes at a time by repeating the procedure mentioned above. The SM-16/2 FX supports up to 10 shapes to run simultaneously.
- In the Shape menu, press <A>[Edit Shapes] to view the running status of the shapes.
- To apply the same shapes to two different groups of fixtures, the shapes will be shown twice in the list. You can adjust the "two" shapes individually.
- To delete a shape press <Shape>, press <Delete>, select the desired shape and then press <Enter> to delete.
- Each shape will work only on specific attributes. If a certain attribute is not available in a fixture, the related shapes will not work.

Shape parameters

It is quite easy to modify the range and the speed after a shape has been selected.
01) Press <Shape> in the initial menu.
02) Press <B> [Shape Parameters].
03) Highlight the desired shape with <A> or <B>. Then adjust the value of the parameter with wheels A and B.

If more than one shape is running, the operation will only be applied to the current shape. In [Shape parameters] you can edit the parameters of any running shapes. There are 2 pages of shape parameters, press <Up>/<Down> to scroll. Use the wheels to adjust the parameters.
The parameters are:

- **Size:** The range of the channel data. When the value is 0, the shape will be paused.
- **Speed:** The running speed of the shape. When the value is 0, the shape will be paused.
- **Repeat (Drg.):** The period of a shape is 360°. This is the interval angle between two nearby fixtures.
- **Spread:** It means the total fixture number (not including the first fixture) in a shape period.
  When the value = none, all fixtures will perform the same shapes;
  When the value = 1, the first fixture and the third fixture will perform the same shapes.
  When the value = 2, the first fixture and the fourth fixture will perform the same shapes.
  When the value = even, the shape period of the selected fixtures will be distributed evenly to create an even wave.
- **Direction:** There are four directions of shapes, it determines the direction of the shape. You can choose "<-", "->", "<-->" and "-><-".

Record a running shape onto a playback fader

This function you have to use to playback a shape.

01) Press record.
02) Press <A> to select record Scene
03) Select the desired mode (record by fixture/channel, mode 0, 1, 2 or 3). For more info see page 13-15.
04) Press the desired Unit button to confirm.
05) Press <Clear> to exit the shape in the Programmer.

Edit a Running shape

[Edit Shapes] in the Shape Menu can be used to edit a running shape. Only the selected shapes can be edited. The shapes in a Scene cannot be edited here.

01) Press <Shape> in the initial menu.
02) Press <A> [Edit Shapes].
03) The screen shows the shapes that can be edited.
04) Press <A> or <B> to highlight (select) a shape.
05) Press Exit and then edit the parameters of the shape.

Delete a shape

When you are not satisfied with the shape, you can delete the shape by following the steps below.

01) Press <Shape> in the initial menu.
02) Press <Delete/Off>.
03) Press <A> or <B> to highlight (select) a desired shape.
04) Press <Enter> to delete.

Playback parameters

This option allows you to set parameters for a shape stored in a playback / scene. You can choose between size (static or time) and speed (static or time). When a scene fades in, the shape can start at full size and speed instantly (both parameters set to static) or the shape's speed and size should fade in as well (both parameters set to time).

01) In Shape menu, scroll down and press <B> [Playback Parameters].
02) Press the <Playback> button of the playback you want to set parameters for.
03) Press <A> to set the size to Static or Timed.
04) Press <B> to set the speed to Static or Timed.

Tip: If you want to have adjustable size of the shape on the fader: set size=Time, speed= Static.
If you want to have adjustable speed of the shape on the fader: set size=Static, speed= Time.

Scene

There are many functions in this controller to create a complicated lighting effect. The most fundamental part is a scene, in which you can store a "look" you have created using your light.
There are 16 scene buttons on 5 pages. A total of 80 scenes can be stored.

Creating a scene

This console has a special internal scene called the "Programmer". Whenever you change a channel of a fixture, the changes are stored in the Programmer. When you record a scene, the contents of the programmer is stored in the scene. Nothing else from the console output is stored.
This console has two programming modes, "Record by Fixture" (the normal mode) and "Record by Channel". You can change the mode by pressing <A> when storing a scene. The differences between these two modes are:

- **Record by Fixture:** When you change any channel of a fixture, all the other channels are placed in the Programmer as well. You will get exactly the result you expected when you recall the scene. But you can't combine scenes containing the same fixtures, because the new scene will just override the old one.
- **Record by Channel:** Only the channel you change is stored in the programmer. This means you can save scenes which only contain certain information, then recall them with other scenes to set colors, gobos, etc. This is much more flexible but it initially requires more programming, because you need several scenes to get a result. This can cause problems if you don't keep tabs on what you are doing. (This is known as Tracking mode on other consoles).

When you press <Clear>, all fixtures are cleared from the programmer. To start programming a scene you should start every time pressing <Clear>. If you don't do that, it is possible you will record fixtures you don't want to. You also need to press <Clear> when you finish the programming, because any value in the programmer will override playbacks. Turning on a scene does not put the values from the scene in the programmer (However the Include-function allows you do this).
Tip: Press <Clear> to clear the programmer. This ensures that you are starting with a clean slate.

01) Set up the stage effect using the fixtures. You can include shapes in a scene. Remember that only the fixtures you have changed, will be included in the scene.
02) Press <Record>.
03) Select <A> [Record Scene].
04) Select desired mode (record by fixture/channel, mode 0, 1, 2 or 3). For more info, see page 15.
05) At this time, the indicators of the empty playbacks will start flashing.
06) Press a flashing Unit button to record the data. (First select a new page if you want to use a different page).
07) Press <Clear> to clear the programmer. Go back to step 01 to program more scenes.

Using shapes in Scenes

Any shapes you have set up, will be saved as part of the scene. If the base value of the shape is not in the programmer (e.g. the central pan/tilt position, for a circle) and the shape is a "User" type, then the scene will contain a "relative" shape. When you recall the scene, the shape will start, based on the current position of the fixture. This allows you to create lots of different effects by layering a few different scenes, one for the shape and one for the base position. You can either use "Record by channel" mode and not set the position, or use the "Off" function to achieve this effect.

HTP and LTP channels

The SM-16/2 FX can treat control channels in three ways:

- Dimmer or intensity channels work on the principle of "highest takes precedence" (HTP). If an HTP channel is turned on at different levels in several scenes, the highest level will be output. When you fade a scene, the HTP channels fade out with it.

- Moving light channels work on the principle of "latest takes precedence" (LTP). The latest change takes over from any other value. So the most recent scene to be turned on, is the one which has an output. When you fade a scene, LTP channels do not normally fade (though you can make them if you want, except for channels set to instant).
- The patch function tells the console which channels of a fixture are HTP and which are LTP. Normally, only dimmer attributes are HTP, and everything else is LTP. If a fixture does not have an intensity control channel, the Gobo channel is defined as HTP to make sure the fixture blacks out when a scene is turned off.

Playback a scene

To playback a scene, just slide the playback fader or press the playback button. (Make sure there are no values in the programmer, because anything in the programmer will override the playback). Erase the programmer by pressing the <Clear> button.

- You can activate more than one scene at once (maximum 10).
- Fade in/out of all the HTP (intensity) of the scenes will be activated when the slider is up/down. The LTP (movement) channels will start immediately once the fader value is higher than 0. (The LTP channels also run like this, when the scenes are in Mode 1 or Mode 2 unless the channels are set without fading function in the fixture library.)

Editing a scene

You can edit any part of a saved scene:

01) Press <Clear> to erase the programmer.
02) Choose the scene you want to edit. Switch all the other scenes off to avoid confusion.
03) Select the fixtures you want to edit and change the scene.
04) Press the <Record> button and press <A> [Record Scene].
05) Press the current Unit button of the fixture you are editing.
06) Press <A> [Merge Scene] to change the existing scene. Unchanged information is not affected.

- In the "Record by fixture" mode, all attributes of any fixture you've changed will be saved in the scene with their current settings. If you only want to save certain attributes of a fixture, use the "Record by channel" mode.
- You can overwrite the existing scene entirely by using <B> [Replace Scene]. This erases the playback and saves the current programmer as a new scene.
- If the scene contains shapes and you have to edit some new shapes, a warning will pop up. If you press "yes," the original shapes in the scene will be deleted after a warning. To achieve this, you have to use the "Include" mode on the original scene (see next section), in order to load the shapes into the programmer. Make sure that the playback fader for the scene is at 0 (i.e. the shape is not active) if you are in the "Include" mode.

Include function

With the include function you are able to load selected parts of a scene back into the programmer. (Normally only manual changes into fixtures are saved in the programmer). You can use this to make a new scene. This is useful if you want to create a scene which is similar to a scene you already have.
To include the scene:

01) Press <Copy/Include>.
02) Press the <Playback> button of the desired Scene.
03) Press <Enter> to include the data.

Copy a scene

With this function you are able to copy a selected scene.

01) Press <Copy/Include>.
02) Press a Unit button that stores a Scene.
03) Press an empty Unit button to copy.

Delete a scene

With this function you are able to delete a selected scene.

01) Activate a scene page.
02) Press the <Delete> button.
03) Press a desired Unit button.
04) Press the Unit button again to delete.

Time

You can independently set a fade in time for each scene. It will affect only the fades with HTP (intensity) channels. There is a separate LTP timer which allows you to set movement times. LTP channels which are set to "instant" during the patching will ignore LTP fade times.

01) Press the <Time> button.
02) Press the Unit button of the scene where you want to add a fade in time.
03) There are two pages in the menu. With the <Up> or <Down> button you are able to browse. Select the desired option and modify the data with wheel B.
04) Press <Enter> twice to save and exit or press <Exit> twice to exit without saving.

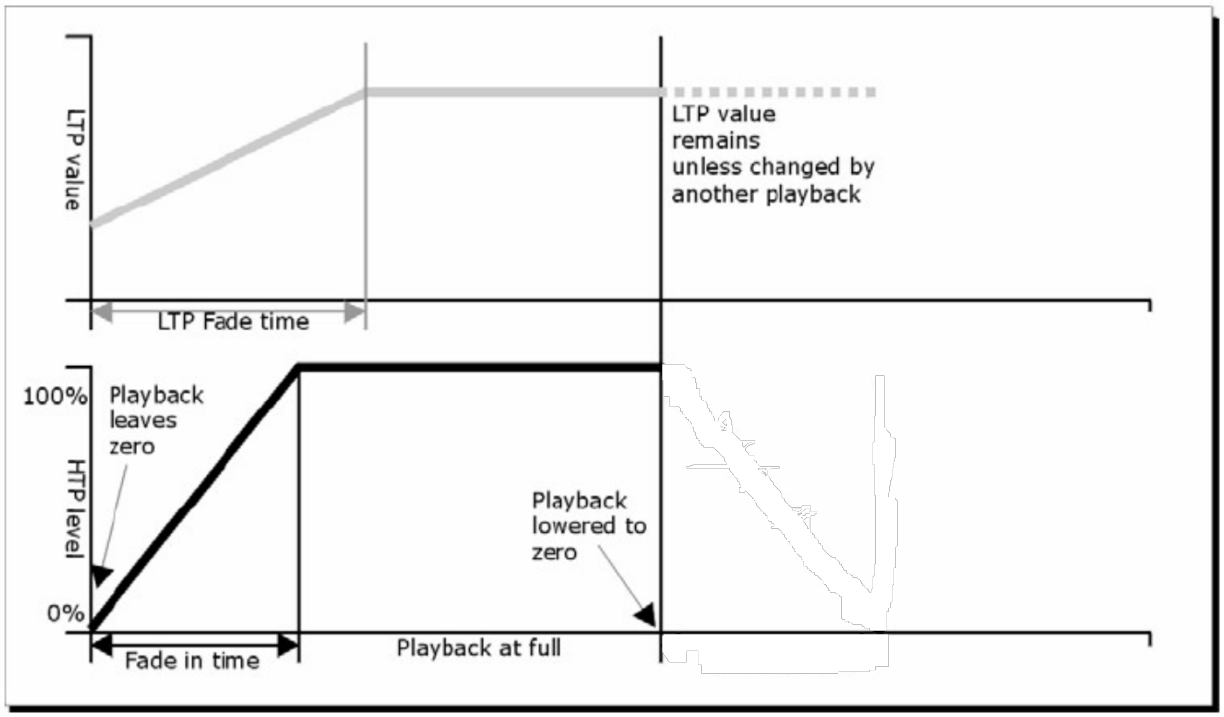


Fig. 03

The time parameters include:

- **HW:** Wait time of an HTP channel.
- **HF:** Fade time of an HTP channel.
- **LW:** Wait time of an LTP channel.
- **LF:** Fade time of an LTP channel.

The effect of the multiple time parameters is shown in figure 03.

The time parameters which are chosen will also be affected by the scene mode:

- **Mode 0** – No timing parameter is used. The HTP channels fade with the playback faders.
- **Mode 1** – Channels will fade which are set by the HTP and LTP fade parameters (except Instant LTP channels). If you set a time parameter for a **Mode 0** scene, it will automatically change to **Mode 1**. If HTP times are set to 0, the HTP levels will fade with the fader
- **Mode 2** – HTP channels will fade if they are set by the HTP time parameters, or with the fader if the time parameters are set to 0. LTP channels are controlled by the fader position (except Instant channels). The initial data of LTP is the data before the slider is pushed up. Set the LTP fade time to 0 to use this mode.

- **Mode 3** – HTP channels fade as set by the HTP times, or with the fader if times are set to 0. LTP channels are controlled by the fader position (except Instant channels). The initial value of LTP is 0. Set the LTP fade time to 0 to use this mode.

Chase

With the SM-16/2 FX controller you are able to edit one chase with up to 100 steps. There are 16 chase buttons on 5 pages. A total of 80 chases can be stored.

Programming a chase

To program a chase, you have to change the lighting of the fixture for each step of the chase. The contents of the programmer are recorded as a step.
You can program all the fixtures manually for each step or you can use the "Include" button to load the information from scenes you have already recorded.
You cannot use an existing scene as a chase step just by turning it on. You have to use the "Include" button to load the scene into the programmer.

01) Press <Record>
02) Press <B> [Record Chase].
03) Press the Unit button of the chase.
04) Set up the lighting for the first step, either manually or using the "Include" button for existing scenes.
05) Press <Enter> to store the programmer contents as step 1 of the chase.
06) Press <Clear>.
07) Repeat from step 01.
08) Once the chase programming is finished, press <Record> to exit.
09) Press <Clear> after saving the chase. Otherwise when you try to play it back, the programmer will override the chase and you won't see the chase properly.

- The current step number is displayed in the prompt line.
- You can program shapes in a chase. If the same shape is saved in subsequent steps, it will continue from step to step. If not it will stop at the end of the step time. The console considers the shape to be the same if you don't press <Clear> after the previous step. Also the console considers the shape to be the same if you don't change the speed, size or spread of the shape from the previous step. Or if you choose to include the shape from the previous step and don't change it.
- Max. 100 steps can be edited in a chase.

Running a chase

To run a chase, press the desired playback page button (05) and move up the appropriate fader, or press a Unit (chase) button (03).

- Two or more chases can be run simultaneously.
- All the HTP (brightness) channels of the chases are controlled by the faders. The LTP (movement) channels will follow the chase if the fade time is set.

Connecting a chase to the controls

When a chase is running, the playback control will automatically be connected to the chase. Running the second chase, the playback control will be connected to the new chase.

- By pressing the corresponding Unit button you can set which chase is connected for playback control.

Setting speed and crossfade

You can use the wheels to adjust the speed and fade time of a chase when the chase is selected.

- **Speed (S):** The interval time between two steps. If you change the global time, the interval times between the steps will change accordingly, too.
- **Crossfade:** It means the ratio of Wait Time to Fade Time within the interval time between two steps. The two values on the screen are the HTP slope ratio and the LTP slope ratio. FF means the total time is a slope time , the wait time is 0. When the value is 70, it means that 70% of the total time is slope time and the rest is wait time. Use <Wheel B> to adjust this value.

- **Wait Time:** For example, a fixture is moving from point A to point B. The wait time is set to 3 seconds. The fixture stops at point A for 3 seconds and after 3 seconds the fixture will start moving.
- **Fade Time:** For example, a fixture is moving from point A to point B. The fade time is set to 3 seconds, the movement of the fixture from point A to point B will last for 3 seconds.

Once the speed of chase is saved, it will run at this speed in the entire future playback:
01) Activate the Chase button in the initial menu.
02) Use <Wheel A> to adjust the speed.
03) Press <A> [Chase XXX Parameters].
04) Press <A>[Save Speed].

- To set the speed of the chase at the time of editing, activate the Chase button and press <B> in the initial menu.

Add a step

To add a step is similar to edit a chase step.
01) Press <Record>.
02) Press <B> <Record Chase>.
03) Press a Unit button of the chase.
04) Set up the lighting for the new step.
05) Press <Enter> to store the programmer contents.
06) Once the chase programming is finished, press <Record> to exit.

Re-edit a chase

You can also re-edit the chase by using the following buttons:
01) Press <Record>.
02) Select <B>[Record Chase]
03) Press the Chase button that you want to re-edit.
04) You can edit the chase with the options below.

- Edit a step: press <Clear> to clear the programmer.
  Press <Up>/<Down> to select a step to edit.
  Press <Copy/Include> to include the data of the step into the programmer.
  Edit the step. Press <Enter>.
  You can choose further between "Merge", "Overwrite" or "Insert".
- To insert a new step, you have to set the parameters of the new step first.
  Press <Up>/<Down> to select a step you want to edit.
  Press <Enter>.
  Press <A> [Insert a Step].
  The new step will be inserted and the following steps will be pushed back by one step.
- To delete a step: press <Up>/<Down> to select a step you want to delete.
  Press <Delete Off>.
  Press <B> [Delete Step Confirm] to confirm.
- To copy a step: press <Clear> to clear the programmer.
  Press <Up>/<Down> to select a step you want to copy.
  Press <Copy/Include> to include the data into the programmer.
  Press enter to save the step.
- You can add a shape in the chase by pressing <Shape>.
  Then you can create a shape with the functions explained in the chapter Shapes.

05) Press <Record> again to exit the re-edit mode.

Delete a chase

To delete a chase is the same as to delete a scene:
01) Select the desired chase.
02) Press <Delete>.
03) Press the desired Unit button twice.

The global time of a chase

With this function you are able to set the global time of a chase:

01) Press <Time>.
02) Press a Chase button.
03) Press <Up>/<Down> to turn the pages.
04) Press <A>/<B> to select an option.
05) Use the wheels to adjust the value.
06) There is a "Link" option on page 2 of the Time menu. If "Link" is set to ON, the chase will run step by step automatically. If "Link" is set to OFF, you have to press the corresponding Unit buttons to run the steps one after another.
07) Press <Enter> twice to save and exit, or press <Exit> to exit without saving.

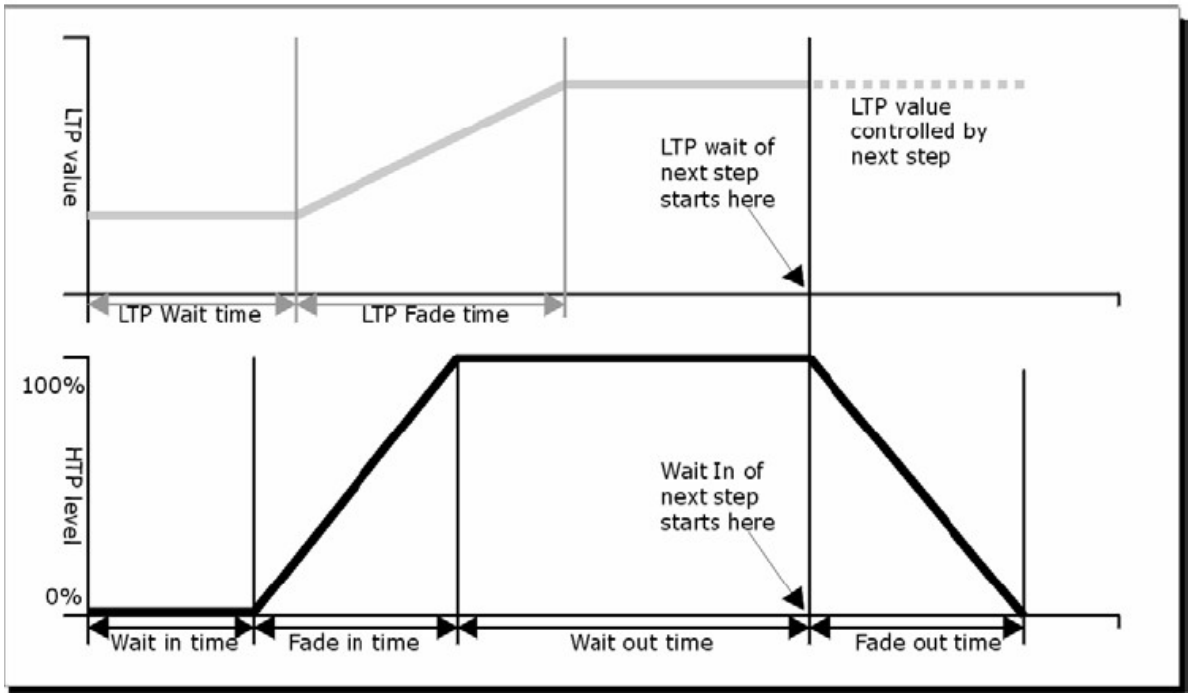


Fig. 04

The time options include (see figure 04):

- **HW:** Wait time of HTP channel.
- **HF:** Fade time of HTP channel.
- **LW:** Wait time of LTP channel.
- **LF:** Fade time of LTP channel.
- **Link:** If Link is set to Off, the chase will pause at this step. You have to press the Unit buttons to play the corresponding steps.

Set separate time for a step

The HTP time and LTP time can be set to each single step separately. A chase step with separate time is called a complex step. If it is using the global time, then it is a simple step. To set a separate time for each step, you can unfold the chase for easy operation.

01) Press <Record>.
02) Select <B> [Record Chase].
03) Press the Unit button of the chase.
04) Press <Up>/<Down> to select the step for time setting.
05) Press <Time>.
06) Press <Up>/<Down> to turn the pages.
07) Press <A>/<B> to select an option. Use the wheels to adjust the value.
08) Press <Enter> twice to save.

- Any modification will turn a step into a complex step.
- To turn a complex step back to a simple step, you can go to Page 2 and change it in Option <B>.

Advanced options

Each chase has several options to influence the parameters of the chase. Select the desired chase by pressing the Unit button of the chase. Select <A>[Chase Parameters] to change the parameters of the chase. You can scroll through the options with the <Up>/<Down> buttons, the options are:

- [Save Speed]: By using the wheels A/B you can set the current speed of the chase.
- [Loop Playback/Stop on final step]: With this option the chase stops after the final step. If the chase stops, you have to press the corresponding Unit buttons to activate the steps.
- [Skip first wait time/Skip first W/F time/Wait and fade for all steps]: Allows you to skip the first wait time and/or fade of a chase. You often want to do this so the chase starts as soon as you move the fader.
  - Skip first wait time: The wait time is set to 0, when the chase is first turned on.
  - Skip W/F time: All times are set to 0, when the chase is first turned on.
  - Wait and Fade for all steps All times will be implemented when the chase is turned on.

Setup

Press the <Setup> button to enter the Setup menu. In the Setup menu you can choose between the functions, patch, language selection, data back-up, wipe, and loading and system information.

Patch

For the option patch please see page 10 (Patching, for more information).

Language Selection

The available languages are Chinese and English.

Data backup and loading

- **Data Backup (USB input):** Choose this menu. Modify the text with wheel B. Move the cursor with <Up>/<Down> to choose between to delete text (Press <Delete>) or to backup the data (Press <Enter>).
- **Data Loading (USB input):** Select the desired data to load, press <Enter> to start loading.

Wipe

This option can be used to erase all the data in the controller (<A>) or erase only the playback data <B>.

System information

With this function you are able to see the current version information.

Update

With this function you are able to update the controller.
Please follow the next steps to update the controller:

01) Switch the Power off.
02) Copy the updated file to a USB flashdrive and insert it to the USB port of the controller.
03) Switch the power on. It starts searching the update firmware on the USB flashdrive. Once detected, it prompts to update or not.
04) Press <Enter> to update. After the update, the controller reboots automatically.

Maintenance

The operator has to make sure that safety-relating and machine-technical installations are to be inspected by an expert after every year in the course of an acceptance test.
The operator has to make sure that safety-relating and machine-technical installations are to be inspected by a skilled person once a year.

The following points have to be considered during the inspection:
01) All screws used for installing the device or parts of the device have to be tightly connected and must not be corroded.
02) There may not be any deformations on housings, fixations and installation spots.
03) Mechanically moving parts like axles, eyes and others may not show any traces of wearing.
04) The electric power supply cables must not show any damages or material fatigue.

The Showtec SM-16/2 FX requires almost no maintenance. However, you should keep the unit clean. Disconnect the mains power supply, and then wipe the cover with a damp cloth. Do not immerse in liquid. Do not use alcohol or solvents.
Keep connections clean. Disconnect electric power, and then wipe the DMX and audio connections with a damp cloth. Make sure connections are thoroughly dry before linking equipment or supplying electric power.

Troubleshooting

No Light

This troubleshooting guide is meant to help solve simple problems.
If a problem occurs, carry out the steps below in sequence until a solution is found. Once the unit operates properly, do not carry out following steps.
If the SM-16/2 FX does not operate properly, refer servicing to a technician.
Response: Suspect two potential problem areas: the power supply, the fixtures.

01) Power supply. Check that the unit is plugged into an appropriate power supply.
02) Return the SM-16/2 FX to your Showtec dealer.
03) A fixture does not respond to the SM-16/2 FX: Check the DMX-address of the fixture and the controller. Make sure they match. Make sure the connections are correct. Check if blackout is off.
04) If all of the above appears to be O.K., plug the unit in again.
05) If nothing happens after 30 seconds, unplug the device.
06) If you are unable to determine the cause of the problem, do not open the SM-16/2 FX, as this may damage the unit and the warranty will become void.
07) Return the device to your Showtec dealer.

No Response to DMX

Response: Suspect the DMX cable or connectors, a controller malfunction, a light effect DMX card malfunction.

01) Check the DMX setting. Make sure that DMX addresses are correct.
02) Check the DMX cable: Unplug the unit; change the DMX cable; then reconnect to electrical power. Try your DMX control again.
03) Determine whether the controller or light effect is at fault. Does the controller operate properly with other DMX products ? If not, take the controller in for repair. If so, take the DMX cable and the light effect to a qualified technician.

Product Specifications

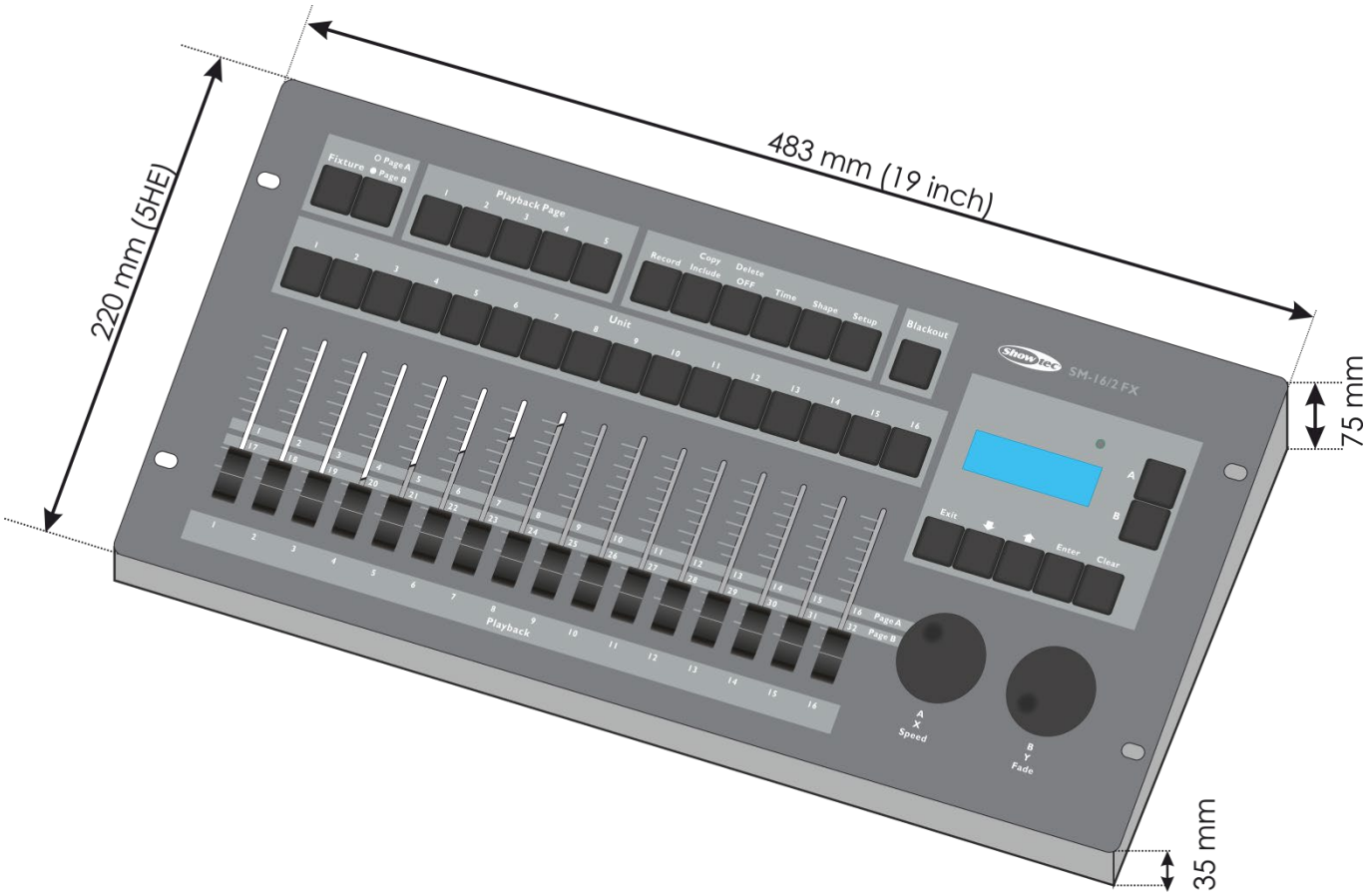
Model:	Showtec SM-16/2 FX
Power Supply:	230VAC (50Hz)
Fixtures:	16 (each 32 channels)
Scenes:	80 (5 banks)
Chases:	80 (5 banks)
Total Chase Steps:	100
Run mode:	Auto, Manual
Patch mode:	Each fixture free assignable channels
Output:	DMX-512 standard
Output connector:	3 and 5 pole XLR female
Dimensions:	483 x 220 x 75 mm (LxWxH)
Weight:	3,8 kg

Design and product specifications are subject to change without prior notice.

CE

Website: www.Showtec.info
Email: service@highlite.com

Dimensions



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