X-MG-51

DMX Merger
User Manual

X-MG-51 DMX Merger
User Manual
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Issued by

SWISSON AG
Fabrikstrasse 21
CH-3250 Lyss
Switzerland

E-Mail: welcome@swisson.com

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Model: X-MG-51
85-276VAC
50/60Hz
315mA

CE

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X-MG-51 High Speed 5:1 DMX Merger

With the X-MG-51 you get a powerful DMX- Merger with several options. The Merger is qualified for usage in all branches of light engineering.

This booklet shows you all the functions of the X-MG-51. There is also a brief review over the theory of merging.

1	**LEFT**
	With this button the cursor on the display is moved one position to the left
2	**RIGHT**
	With this button the cursor on the display is moved one position to the right
3	**UP**
	This button is for scrolling up in the menu and to count up to a number
4	**DOWN**
	This button is for scrolling down in the menu and to count down to a number
5	**DISPLAY**
	LCD display with LED backlight
6	**YES/OK**
	Pressing this button will confirm any entered value or menu point
7	**NO/CANCEL**
	Pressing this button will cancel any entered value or menu point
8	**MERGE**
	Pressing this button will activate the merger
9	**MERGE ACTIVE**
	This LED shows if the merger is active

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10	**SIGNAL**
	This LED shows if there is a signal on the corresponding input
11	**ERROR**
	The error LED will glow red if there are any errors in the DMX log of the corresponding input
12	**ACTIVE**
	If there is a value merged through the output from the corresponding input, this LED will light up
13	**INPUT**
	Pressing one of these buttons will switch the corresponding input direct to the output
14	**DMX OUTPUT**
	On this connection the DMX output signal can be found
15	**DMX INPUT 1**
	DMX input line 1
16	**DMX INPUT 2**
	DMX input line 2
17	**DMX INPUT 3**
	DMX input line 3
18	**DMX INPUT 4**
	DMX input line 4
19	**DMX INPUT 5**
	DMX input line 5
20	**USB INPUT**
	This USB link is for downloading software updates
21	**POWER INPUT**
	Power input 85-275 VAC
22	**POWER ON**
	As soon as the internal power supply is stable, this LED will light.
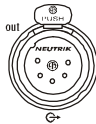
Bypass

If the X-MG-51 is powered down, DMX input line1 is switched directly to the output:
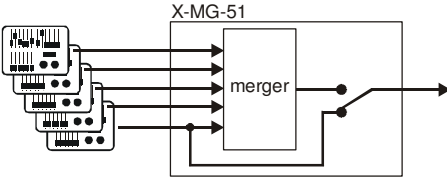
Manual switching

- With the [M] button the merger is activated:
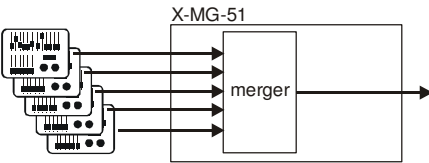
- If one of the buttons [1] – [5] is pressed, the corresponding input line is directly switched to the output. In this state, the merger is deactivated:
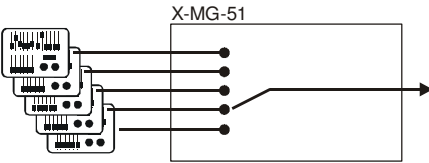
The main menu

After 2 seconds of the merger being powered up, the following information will appear on the display:

```
X-MG-51
V  1.0
```

If the menu is locked by a password (see chapter Password) the following information will appear on the display if any menu button is pressed:

```
PASSWORD
    0000
```

The password can be entered with the menu buttons and confirmed with the OK button. If the password is wrong, the value on the display will be set back to 0000. If the correct password is entered, the X-MG-51 will go to the main menu. The Main Menu contains the following 4 options:

```
--MENU--
MERGE
```

```
--MENU--
OFFSET
```

```
--MENU--
RESTORE
```

```
--MENU--
LOCK
```

The UP and DOWN buttons are used to navigate through the menu. The following text --MENU-- will always appear on the top line of the display when in the menu mode.

Keyboard lock / password

To activate the keyboard lock or to change the password,
choose LOCK in the main menu and press OK. You are now in
the password menu. There are 3 options to choose from:

```
--LOCK--
MENU
```
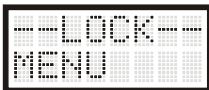
MENU - If you choose this option, the menu will be locked but
the switch buttons can still be used.
Press OK to enter a new password.

```
--LOCK--
COMPLETE
```

COMPLETE - In this option, the whole keyboard of the merger
will be locked; the X-MG-51 can't be manipulated by anyone
other than the person who knows the password. Press OK to
enter a new password.

```
--LOCK--
UNLOCK
```

UNLOCK - This option unlocks the whole merger. The menu
and the switch buttons are released and can be easily
manipulated by anyone.

Restore the X-MG-51

The X-MG-51 has many adjustable parameters. In some cases it's practical to set back all parameters to their default settings.

Select RESTORE in the main menu and press OK. Once that is done the X-MG-51 will display the following:

```
-RESTORE
SURE  ?
```

If the OK button is pressed again, all parameters will be set back to their original default settings
- Merge mode of all channels is HTP
- All offsets are set to 1

Change merge mode

To change the merge mode, go to MERGE in the main menu and press OK. There are now 4 options to choose from:

```
-MERGE-
HTP
```

```
-MERGE-
LTP CH
```

```
-MERGE-
LTP LINE
```

```
-MERGE-
SINGLE
```

The following chapters will give you a brief over view and theory about these modes.

HTP

HTP (Higher Takes Precedence) means that the highest value of all inputs always takes precedence. The following picture will explain this in more detail. You can see a simplified DMX Data Stream on every input. The highest value of each channel is marked in green:

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	255	Ch 1
10	0	0	100	0	100	Ch 2
90	78	0	46	32	90	Ch 3
200	100	54	0	100	200	Ch 4
48	0	35	41	0	48	Ch 5
0	50	78	0	5	78	Ch 6
135	128	0	10	150	150	Ch 7
18	255	0	0	0	255	Ch 8
87	36	255	0	0	255	Ch 511
25	0	0	0	0	25	Ch 512

As illustrated above, the highest value of each DMX channel takes precedence over and above other values on that same channel.

To choose HTP, go to MERGE in the main menu, press OK and then select HTP and press OK again.
2 seconds after confirmation is displayed, all of the channels on the X-MG-51 are set to HTP.

LTP ch

LTP ch (Last Takes Precedence - channel) means that the channel whose value has been changed last always takes precedence over the other channels. The following illustration should explain this theory in more detailed. You can see 4 successive DMX packages. The changed values are marked in yellow:

To choose LTP ch, go to MERGE in the main menu, press OK and then select LTP CH and press OK again. After 2 seconds, confirmation will appear on the display. At that point all the channels of the X-MG-51 will be set to LTP ch.

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	0	Ch 1
10	0	0	100	0	10	Ch 2
90	78	0	46	32	90	Ch 3
200	100	54	0	100	200	Ch 4
48	0	35	41	0	48	Ch 5
0	50	78	0	5	0	Ch 6
135	128	0	10	150	135	Ch 7
18	255	0	0	0	18	Ch 8
87	36	255	0	0	87	Ch 511
25	0	0	0	0	25	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	255	Ch 1
10	0	0	100	0	100	Ch 2
90	78	0	46	32	90	Ch 3
200	110	54	0	100	110	Ch 4
48	0	35	41	0	48	Ch 5
0	50	78	0	5	78	Ch 6
135	128	0	10	150	150	Ch 7
18	255	0	0	0	255	Ch 8
87	36	255	0	0	255	Ch 511
25	0	0	0	0	25	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	255	Ch 1
10	0	0	100	0	100	Ch 2
90	78	0	46	32	90	Ch 3
200	110	54	0	100	110	Ch 4
48	0	35	41	0	48	Ch 5
0	50	100	0	5	100	Ch 6
135	128	0	0	150	0	Ch 7
18	255	0	0	0	255	Ch 8
87	36	255	0	0	255	Ch 511
25	0	0	0	0	25	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	255	Ch 1
10	0	0	100	0	100	Ch 2
90	78	0	46	32	90	Ch 3
199	110	54	0	100	199	Ch 4
48	0	35	41	0	48	Ch 5
0	50	100	0	5	100	Ch 6
135	128	0	0	150	0	Ch 7
18	255	0	0	0	255	Ch 8
87	36	255	0	0	255	Ch 511
25	0	0	0	0	25	Ch 512

LTP line

LTP line (Last Takes Precedence line) is very akin to LTP ch. With LTP line, the line on which any value has changed last takes precedence over the other lines.

The following picture will explain this in more detail. You can see 4 successive DMX packages; the changed values are marked in yellow:

To choose LTP line, go to MERGE in the main menu, press OK and then select LTP LINE and press OK again. After 2 seconds confirmation will appear and all channels of the X-MG-51 will be set to LTP line.

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	0	Ch 1
10	0	0	100	0	10	Ch 2
90	78	0	46	32	90	Ch 3
200	100	54	0	100	200	Ch 4
48	0	35	41	0	48	Ch 5
0	50	78	0	5	0	Ch 6
135	128	0	10	150	135	Ch 7
18	255	0	0	0	18	Ch 8
87	36	255	0	0	87	Ch 511
25	0	0	0	0	25	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	0	Ch 1
10	0	0	100	0	0	Ch 2
90	78	0	46	32	78	Ch 3
200	110	54	0	100	110	Ch 4
48	0	35	41	0	0	Ch 5
0	50	78	0	5	50	Ch 6
135	128	0	10	150	128	Ch 7
18	255	0	0	0	255	Ch 8
87	36	255	0	0	36	Ch 511
25	0	0	0	0	0	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	255	Ch 1
10	0	0	100	0	0	Ch 2
90	78	0	46	32	0	Ch 3
200	110	54	0	100	54	Ch 4
48	0	35	41	0	35	Ch 5
0	50	100	0	5	100	Ch 6
135	128	0	10	150	0	Ch 7
18	255	0	0	0	0	Ch 8
87	36	255	0	0	255	Ch 511
25	0	0	0	0	0	Ch 512

DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
0	0	254	255	45	0	Ch 1
10	0	0	100	0	10	Ch 2
90	78	0	46	32	90	Ch 3
199	110	54	0	100	199	Ch 4
48	0	35	41	0	48	Ch 5
0	50	100	0	5	0	Ch 6
135	128	0	0	150	135	Ch 7
18	255	0	0	0	18	Ch 8
87	36	255	0	0	87	Ch 511
25	0	0	0	0	25	Ch 512

The Single Mode

With the X-MG-51 it's possible to configure each DMX channel separately to one of the described merge modes. With this feature it is possible to solve almost any DMX merging problem. The following picture shows a possible merge configuration on each DMX channel:

Only HTP	Only LTPch	Only LTPline	Single Mode	
HTP	LTPch	LTPIn	HTP	Ch 1
HTP	LTPch	LTPIn	LTPch	Ch 2
HTP	LTPch	LTPIn	LTPch	Ch 3
HTP	LTPch	LTPIn	LTPIn	Ch 4
HTP	LTPch	LTPIn	LTPIn	Ch 5
HTP	LTPch	LTPIn	HTP	Ch 6
HTP	LTPch	LTPIn	LTPch	Ch 7
HTP	LTPch	LTPIn	HTP	Ch 8
HTP	LTPch	LTPIn	LTPIn	Ch 511
HTP	LTPch	LTPIn	HTP	Ch 512

This Single Mode list can be saved. Once saved, this list can always be recalled.

To enter the Single Mode, go to MERGE in the main menu, press OK and select SINGLE and press OK again. You are now in the Single Mode menu where you can select from 3 options:

```
-SINGLE-
RECALL
```

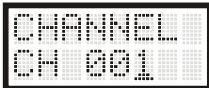RECALL - This recalls the saved Single list.

```
-SINGLE-
RESET
```

RESET - The Single list will be cleared by choosing this option. The user can choose on which merge mode the Single list will be cleared.

```
-SINGLE-
EDIT
```
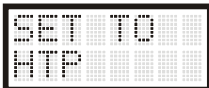
EDIT – This option allows for the Single list to be edited.

If you want to change the Single list, the following information appears on the display:

```
CHANNEL
CH 001
```

With the arrow buttons you can choose the DMX channel on which you want to set a certain mode. When you have entered your choice, press OK:

```
SET TO
HTP
```

```
SET TO
LTP CH
```

```
SET TO
LTP LINE
```

Now you can choose a merge mode for this channel. After choosing the mode by pressing OK, the display will show the channel number, which will be incremented by 1 automatically. Thus all channels can be set separately to a merge mode.
If you are finished with editing the Single list, press CANCEL. You will see the following information on the display:
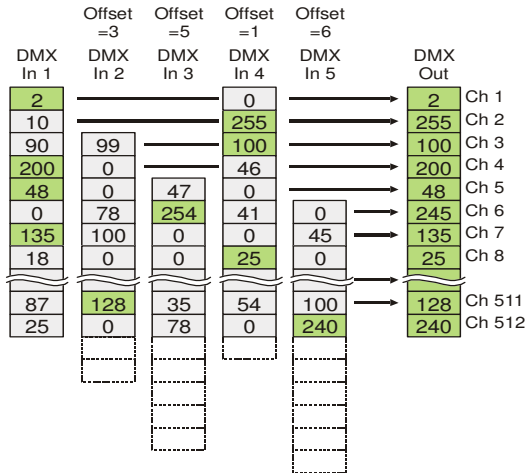
```
-SINGLE-
SAVE?
```

If you now press OK, the just entered Single list will be active and saved.
If you now press CANCEL, the just entered Single list will be active but not saved.

Offset

On the X-MG-51 there is the option to select an offset on each input line beside line1.
With this feature, the DMX data is shifted up in the DMX stream. See the following illustration for better understanding:

	Offset =3	Offset =5	Offset =1	Offset =6		
DMX In 1	DMX In 2	DMX In 3	DMX In 4	DMX In 5	DMX Out	
2			0		2	Ch 1
10			255		255	Ch 2
90	99		100		100	Ch 3
200	0		46		200	Ch 4
48	0	47	0		48	Ch 5
0	78	254	41	0	245	Ch 6
135	100	0	0	45	135	Ch 7
18	0	0	25	0	25	Ch 8
87	128	35	54	100	128	Ch 511
25	0	78	0	240	240	Ch 512

In this example the merger will be ran in HTP mode. You can see that the DMX values first are shifted before they will be merged. Because of the shifting there is surplus DMX data which is cut off and will not have any effects on the process. Input lines 2 to 5 can be configured with an offset between 1 and 512.
The offset number shows you, on which DMX channel the corresponding input is shifted to.

To set offset, choose OFFSET in the main menu and press OK. You now can choose the input line which you want to configure with an offset:
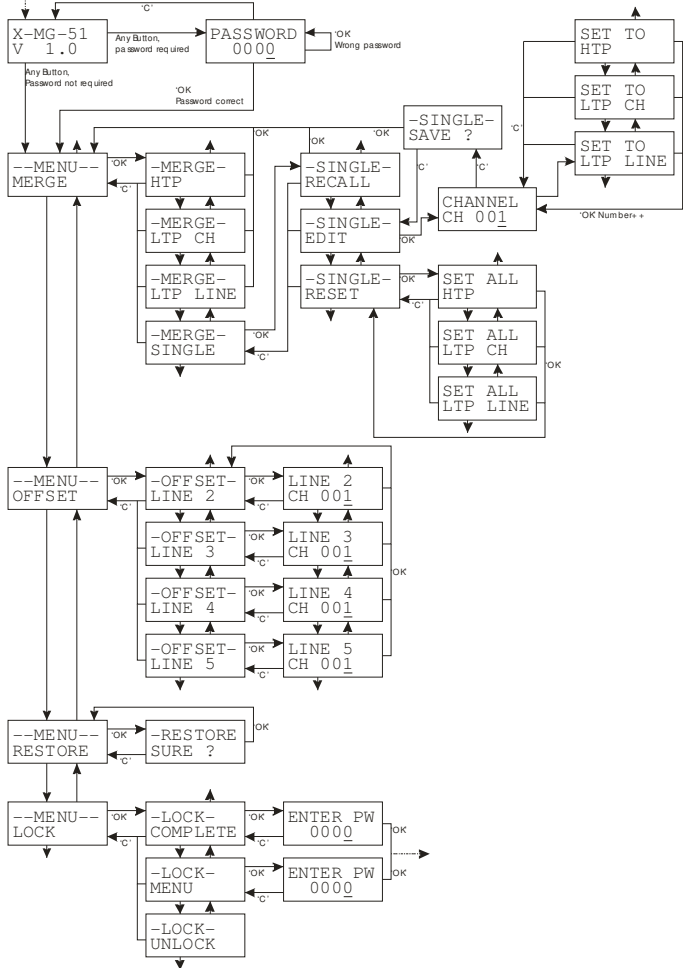
```
-OFFSET-
LINE 2
```

```
-OFFSET-
LINE 3
```

```
-OFFSET-
LINE 4
```

```
-OFFSET-
LINE 5
```

Once the desired input line is selected, press OK. The following information will appear on the display:

```
LINE 2
CH 001
```

Using the arrow keys you can select the offset value. Enter the value and confirm by pressing OK.

Overview of the menu

The following flowchart shows the entire overview of the X-MG-51's menu:

Technical Data

Data Input	5 DMX Input / galvanic isolated to the DMX output and also individually
	1 USB Port for software updates
Data Output	1 DMX Output galvanic isolated
DMX Refresh Rate	Constant 40.3 Hz independent from the refresh-rates of the input lines
Break length	180 us
MAB length	16 us
Merge Modus	HTP / LTP ch / LTP line Each channel can be adjusted separately
Offset	Input lines 2 - 5 from 1 to 512
Bypass	Input line1 direct to output
Measurements	L=430mm / B=109mm / H=45mm
Weight	1.4 kg
Power input	85 – 276 VAC 50Hz / 60Hz
Current drain	315 mA max

Safety Notes

Consider and follow these notes when you are setting up, connecting and using the X-MG-51 DMX Merger:

- Connect all input and output cables only with appropriate plugs and sockets.
- Set the cables accident-proof. Connected cables mustn't be stressed mechanically too much when connected to this or any other electrical device.
- Keep this device away from sources of electrical interference.
- Only connect accessories certified for this device.
- Never open the device yourself. This should be done by certified SWISSON Technicians. NEVER, UNDER ANY CERCUMSTANCE SHOULD THIS DEVICE OR ANY OTHER DEVICE BE OPENED WHILE CONNECTED TO A POWER SUPPLY. Don't touch the plug contacts with metal or pointed instruments.
- Clean the X-MG-51 only with a soft, damp cloth. Don't use chemicals or other cleaning/ scrubbing agents.
- Protect the device against liquids, dust and wetness.
- Don't use or place this product in direct sunlight.
- Don't use the device in a highly combustible area.