Major Relay Card

Operating Manual

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REMARK: Always connect only a SLAVE-MODULE (preferably at bottom position in SWITCH PACK) to a MASTER MODULE (preferably at top position in SWITCH PACK)!

MODULE - START

After power-up the module starts displaying a "STARTUP-TEXT". This is done by inserting character by character after a short delay for each one, starting with the

„MANUFACTURER-TEXT"   with 0,1s per character   in the first line, then the

„PRODUCT-TEXT"   with 0,1s per character   in the second line.

Final display:

`MAJOR...`   if only a MASTER-   `MAJOR...`   if also a SLAVE-CARD
`SW-BOX-6`   CARD exists, or   `SPACK-12`   is detected.

Then, after a 1 second delay, the "PRODUCT-TEXT" flips up into the first line and the version number of the actually implemented firmware is displayed in the second line.

Final display:

`SW-BOX-6`   if only a MASTER-   `SPACK-12`   if also a SLAVE-CARD
`VER 1.04`   CARD exists, or   `VER 1.04`   is detected.

After a further delay time (1 second) the module enters its standard operation mode.

STANDARD - OPERATION - MODE

When all startup messages have passed through, the module enters its standard operation mode.

In the first line the configured DMX start address is displayed continuously. The following presentation shows the static visualization in case of a connected, accurate DMX input signal. Is the signal missing or corrupt, instead of the ":" character in the "DMX:" text a "?" mark is blinking in change with a full cursor.

The second line shows the state of the relays. Here a "1-pixel-point" signals a relay in the off state, a "filled circle" (Master SOLO) respectively a "filled square" (Master + Slave) represent the switched-on mode.

Display,   or

`DMX: 001`   if only a MASTER-   `DMX: 001`   if also a SLAVE-CARD
`R:··●●··`   CARD exists   `R::::::`   is detected.

If a SLAVE MODULE is connected, the relay state display in the second line is divided into two levels. The upper level shows the states for relays 1 up to 6 located on the MASTER MODULE. Below the relays 7 up to 12 on the SLAVE MODULE are visualized.

When the user has activated the function "DISPLAY AUTO OFF" (explained on following pages), the display changes into the so called "DARK MODE" after 10 seconds.

In this mode the display stops any text output, except one single character in the left top position ("heartbeat"):

> A slowly blinking point "." messages a correct DMX input signal, respectively

> A fast blinking question mark "?" indicates a missing or corrupt DMX signal.

REMARK 1: The complete shut down for the display is inactive in this software version (since 1.02) due to optimization for the use of OLED displays. Therefore the back-illumination remains always on when a LCD display is used.

REMARK 2: If "MANUAL CONTROL" is activated, the display in standard mode differs from the description above and allows the user additionally to switch the relays manually.

Further information are given in chapter > SUB MENU 4.

If any key is pressed in "DARK MODE" the display is reactivated for 10 seconds.

CONFIGURATION - MENU

The left "MENU KEY" allows entry into the "CONFIGURATION MENU".

An eventually inactivated display will be automatically switched on.

If no key is pressed within 10 seconds of activated MENU function the MENU THREAD will be aborted down to the "STANDARD OPERATING MODE" within 10 seconds.

No configuration changes will be done and the module will re-enter standard operation mode again.

Also already done inputs and changes in sub-menus will be lost.

After first actuation of left MENU KEY the first sub-menu is presented. Any use of the MENU KEY changes to the following menu point. At the moment there are following items selectable:

`1 > DMX ADDRESS`	for configuration of configuration DMX Start-address
`2 > DISP CONTROL`	for activation /deactivation of automatic "Display-DARK -CONTROL"
`3 > SWIT LEVELS`	for selection of switch level of relay on-off control
`4 > HOLD LAST INP`	to select relay state in case of DMX - signal-loss

An additional use of the left MENU KEY reenters the device into the standard mode. The entry intro the desired sub menu is done via the right MENU -KEY.

SUB MENU 1 - DMX Start Address

After entry into sub-menu 1 (DMX ADDRESS) following display comes up:

`START-AD DMX: HTO`	to select the DMX start address

"HTO" here stands for the actual start address (H - hundredth, T - tenth, O - ones).

The „H"-position (HUNDREDS) in the beginning has the blinking cursor mark. It can be changed upwards by any press of the right SET KEY

An additional press to the left MENU KEY changes to the ten's position.

This is blinking after a further key press and can now be changed upwards via SET-KEY.

The next MENU - actuation changes to ONE'S position „O" (ONES).

To store entries permanently only after "O"-position the MENU-KEY has to be pressed for one time.

If entered changes shall not be taken over - please just wait for 5 seconds. Then the menu function is automatically aborted.

REMARK: The module automatically calculates the highest allowed DMX start address (SOLO 507, with SLAVE 501) and corrects it during input This can make an additionally entry into DMX - menu necessary.

SUB MENU 2 - Display Control

After entry into in sub-menu 2 (DISP CONTROL) following display appears:

`DISPLAY:`	if it is actually set to	`DISPLAY:`	if it is configured to change
`PERM. ON`	"permanent on", or	`AUTO OFF`	to dark automatically.

The right "SET - KEY" changes between these 2 configuration possibilities.

The left "MENU - KEY" stores the selection.

When the function "AUTO OFF" is selected, the display changes to its dark-mode, if no key has been pressed by the user within a time period of 10 seconds.

In this dark-mode the activity of the module is visualized via a single character in the left top position. So the environment is not influenced by additional light coming from the display.

In case of a perfect DMX input signal a dot is blinking in the left top position.

If the DMX signal is missing or corrupted, the single-character message will be a blinking question mark.

If the function "MANUAL CONTROL" is selected in sub menu 4 (NO DMX - see later), the question mark is replaced by a "M" character.

SUB MENU 3 - Switch Levels

After entry into in sub menu 3 (SWITCH LEVELS) the following display occurs:

`S-LEVEL:`	Mode	`S-LEVEL:`	Mode	`S-LEVEL:`	Mode	`S-LEVEL:`	Mode
`10/11 %`	1, or	`50/51 %`	2, or	`25/75 %`	3, or	`0 / 1 %`	4

The right SET - KEY flips through all these 4 configuration possibilities. The left MENU - KEY stores the actual selection.

The left value represents the control value (in percent) from which on downwards the relay corresponding to the channel is switched off. The right value shows the value for the switch-on process.

SUB MENU 4 - Relay-State in case of missing DMX signal

Entry into sub-menu 4 (HOLD LAST INPUT) leads to following display:

`NO DMX:` `ALL OFF`   Mode 1, all OFF, or   `NO DMX:` `ALL ON`   Mode 2, all ON, or   `NO DMX:` `ALL HOLD`   Mode 3, all holding last input

And now - since software version 1.04

`NO DMX:` `MAN-CONT`   Mode 4, manual "single"- respectively "over-all-control" for the relays, via initialization with a stored relay scenario, if no DMX signal is detected.

The right SET - KEY flips through all these 4 configuration possibilities. The left MENU - KEY stores the actual selection.

Each store process for configuration data (MENU - KEY) inside a sub menu leads the module back into its STANDARD OPERATION MODE.

If additional changes shall be configured in other sub menus, the menu-environment has to be entered again.

REMARK:

The device continues its normal switch function according to all actually stored configuration parameters also when being inside the sub-menu environment.

Single Channel Control (Mode 4 > MAN-CONT)

If mode 4 is activated, the module's STANDARD OPERATION MODE is replaced by the new MANUAL CONTROL MODE, as long as no valid DMX input signal is detected.

This "manual mode" shows the relay switch states inside the upper display line, in contrast to the "normal mode".

So both modes can be distinguished quite easy and quickly by the user. As well the actual key functions inside the "manual mode" can be indicated in the lower line directly above the keys.

The standard display here comes up in the following way:

`R:··●●··` `MANUALLY`   if only the MASTER-CARD exists, or   `R:::::::` `MANUALLY`   if also a SLAVE-CARD is detected.

As soon as the DMX input signal fails, all relays are firstly switched to the internally stored scenario. This scenario can be reprogrammed by the user (">> STORE").

If the "manual mode" is active, the left MENU - KEY allows access to an extended amount of sub functions. The execution of each actually selected sub-function can be initiated with the right SET - KEY.

As already known from the configuration menus, after 10 seconds of no user-activity, also here a fold-back into sub-menu-mode 0 ("MANUALLY") is performed.

Firstly after this fold-back an eventually configured AUTO-OFF function can be executed.

REMARK:

If automatic DISPLAY-DARK function is activated (and of coarse the manual-control is activated), each time when the device changes between "DMX-control" (".") and "manual control" ("M") the display is re-activated for a 10 second period.

The following table informs about the available sub menus (selectable in steps via the left MENU - KEY) inside the manual control mode base display.

MODE	Display in lower line	Function for „SET" - KEY
0	`MANUALLY`	- none - (only display re-activation in case of AUTO OFF)
1	`>> ^MENU`	Entry into configuration menu
2	`>> STORE`	Storing the actual relay switch states as an init-scenario for calling the "manual control mode" in case of DMS input signal loss. After use the display flips back to sub-mode 0 (MANUALLY) and informs the user about the finished reprogramming.
3	`>> S-ALL`	Switching of all relays to ON or OFF in change. (switching reference here is the state of the first relay)
4 ... 9	`> REL 01` `...` `> REL 06`	Switching of single relays (on/off in change) for relay group A (MASTER 1-6)
10 ... 15	`> REL 07` `...` `> REL 12`	Switching of single relays (on/off in change) for relay group B (SLAVE 7-12) (also available if no SLAVE-MODULE attached)

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Electrical Data	
Complying with safety standards	2006/95/EG (Low Voltage Directive) 2004/108/EG (Electromagnetic Compatibility) EN 60204-1 (Machine Safety Standard)
Protection class	I
Supply Voltage	230V AC / 50 Hz
Switching Capabilities (each relay)	230V / 400V AC / 50 Hz 16A resistive load, 8A inductive load