



SyncroSwitch

| Operating Manual

ABOUT US

Synchronorm GmbH are highly motivated producers of high-end multimedia show design software, which features a most unique real-time 3D visualizer. Our dynamic & experienced team thereby operates on a world-wide scale, providing you with the best software & hardware solutions fitting to your dedicated project. From show-design, training-programs, instant support & consulting to continuously soft- & hardware development, the team at Synchronorm is eager to realize your visions. Synchronorm provide the most established & renowned products for the entertainment- & water-show sectors within the industry and beyond.

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■ DMX-RDM High Power Contact Relay Module 4x

SYNCROSWITCH

The SyncroSwitch unit features four independently controllable outputs which can output 16amps @230V AC (resistive load). This makes the SyncroSwitch a suitable tool for all your switching needs: High Power, Low Power, Audio or Lighting Signal, Motor Control, Valves or Power of VFD's. Intelligent internal signal routing, Exclusive switching Options, Momentary or Latching output: Many combinations are possible and can be set from the Synchronorm RDM Browser. The DMX address is set remotely (SyncroTools Address Board required) and stored electronically onto non volatile memory and can be adjusted from the Synchronorm RDM Browser.

WELCOME TO SYNCRONORM

You made a great choice by purchasing Synchronorm's SyncroSwitch hardware unit. Prior to commissioning the unit, please read the following instructions of use carefully and fully familiarise yourself with the unit. Ensure that all work on and with this unit is only carried out in accordance to these instructions. Adhere to the safety information for the correct and safe use of the unit. Keep these instructions in a safe place! Please also hand over the instructions, when passing the unit on to a new owner.

Preface

This document is a guideline for controlling the hardware of Synchronorm's fountain control systems. The information contained in this manual will give you a sufficient understanding of this product, helping you to use the unit correctly and effectively. Adhere to all instructions contained in this manual, when installing and operating this unit. Every person working with this equipment must read this manual before installation and commissioning of the equipment/device. Every person working with this device/equipment must read the manual before starting to work. Even personnel working with this device only occasionally must read and understand this manual before beginning to work. This manual must always be available at the site, where the device is located. Every user of this device must be aware of the location of the manual.

Technical Data

SyncroSwitch*	
Dimensions	160x90x58 mm DIN RAIL
Weight	0.33 kg
Protection Class	IP 20
Power Supply	24V DC
Operation Temperature	0.. 40° / 0.. 80% humidity
Certification	CE
Outputs	4x Contact Relay with max. 16A@230VAC (res. load)
Inputs	DMX512 RDM
Order Number	SN-STSW24

*This unit requires the SyncroTools DMX address board (SN-STADRB).



Checking the Scope of Delivery

Please check that the scope of delivery is complete. Keep the packaging for later transport. If components are damaged or missing, contact your Synchronorm supplier via **info@synchronorm.de**.

Scope of delivery:

1x SyncroSwitch DMX-RDM High Power Contact Relay Module 4x
1x Interface Card

Please note that a programming adaptor (3000P) is not included with DIN rail mount devices. A programming adaptor (required to set DMX start addresses and operating options) must be ordered separately.

Intended Use

The SyncroSwitch, in the following referred to as „unit“, may only be used as specified as follows: The DMX-RDM High Power Contact Relay Module 4x is an intelligent DMX demultiplexer, which decodes digital data complying with standards USITT DMX512 and DIN 56930-2. The card drive changes over six contact relay outputs.

The DMX-RDM High Power Contact Relay Module 4x is suited for all kinds of signal switching applications. It features six potential-free high-power changeover output contacts and high noise immunity.

Safety Information

Danger to persons and assets may emanate from this unit, if it is used in an improper manner or not in accordance with its intended use, or if the safety instructions are ignored. This unit must not be used by children under the age of 18. Persons with impairments or lack of experience and knowledge may use the unit, as long as they are supervised and instructed on how to use the unit safely and are able to understand the potential risks. Do not allow children to play with this unit. Do not allow children to clean or maintain the unit.

Correct electrical Installation

- Electrical installations must meet the national regulations and may only be carried out by a qualified electrician.
- A person is regarded as a qualified electrician, if, due to his/her vocational education, knowledge and experience, he or she is capable of and authorized to judge and carry out the work commissioned to him/her. This also includes the recognition of possible dangers and the adherence to the pertinent regional and national standards, rules and regulations.
- For your own safety, please consult a qualified electrician.
- The unit may only be connected when the electrical data of the unit and the power supply coincide. The unit data is to be found on the unit type plate or on the packaging, or in this manual.
- Ensure that the unit is fused for a rated fault current of max. 3A on the mains side by means of a fault current protection device.





Save Operation

- Never operate the unit, if either the electrical cables or the housing are defective!
- Do not carry or pull the unit by its electrical cables.
- Route cords/hoses/lines in a way that they are protected against damage, and ensure that they do not present a tripping obstacle.
- Only open the unit housing or its attendant components, when this is explicitly required in the operating instructions or approved/prescribed by Synchronorm's technical support service.
- Only execute work on the unit that is described in this manual. If problems cannot be overcome, please contact an authorized customer service point or, when in doubt, the manufacturer.
- Only use original spare parts and accessories for the unit.
- Never carry out technical modifications to the unit.
- Only operate the unit, if no persons are in the water!
- The unit, the connections and the plugs are not water-proof and must not be routed or installed in water.

Qualifications and Training of Employees

- Ensure that installation personnel have the required technical qualifications.
- Also ensure that all operating personnel are sufficiently qualified.
- Ensure that maintenance work is only performed by personnel authorized for this purpose, e.g. specialists of Synchronorm GmbH or personnel with suitable training.

Dangers resulting from non-adherence to the Safety Information

Please note that Synchronorm GmbH assumes no liability for damage, downtimes or malfunctions resulting from non-adherence to this installation and operating manual. By ignoring or not adhering to all of the safety information contained in this manual, you could endanger people, the environment and the system of this unit. For example, non-adherence to the safety information contained in this manual can lead to the following dangerous occurrences:

- A malfunction of important features of this unit
- Danger for persons due to electric shock

Safety-conscious Operation

As a user of this unit, ensure that you follow all safety information contained in this manual. Follow the accident prevention regulations at all times. If the unit is used in a location where internal regulations, operating and safety instructions apply, ensure that these regulations and instructions are also adhered to.



Safety Information regarding Maintenance, Inspection and Installation Work

It is the owner/user's responsibility to ensure that all maintenance, inspection and installation work is carried out by authorized and qualified personnel, who have read and understood this manual.

Only carry out maintenance work on this unit, when the unit system is switched off. Ensure that no pressure is applied to the unit and it is disconnected from the power supply (voltage-free) before carrying out maintenance or repair work.

Ensure that small malfunctions are immediately rectified by authorized personnel to avoid possible future damage, malfunctions and/or downtimes of the unit system. Certain maintenance work may require safety barriers to be removed and/or deactivated. If this is the case, ensure that all safety and protective devices/guards are re-installed and/or reactivated after completing the maintenance work.

Optional retrofitting and Production of Spare Parts

Changes or modifications to the device are only permitted after consultation with the manufacturer. Original spare parts and accessories approved by the manufacturer provide safety. We wish to stress that all parts and accessories not supplied by Synchronorm GmbH have neither been tested nor approved by Synchronorm GmbH. For this reason, the installation and/or use of such products can, under certain circumstances, negatively affect the specifications for the device. This could also lead to restrictions of the active and/or passive safety of the device. Synchronorm GmbH assumes no liability for damage resulting from the use of parts and accessories other than original Synchronorm GmbH parts. In this case all guarantee expires.

Dangers encountered by the Combination of Water and Electricity

- The combination of water and electricity can lead to death or severe injuries from electrocution, if the unit is incorrectly connected or misused.
- Prior to reaching into the water, always switch off the mains voltage to all units used in the water.



The decoder SyncroSwitch consists of the following input and output connectors:

CN3 POWER SUPPLY 24V DC

red +
blue -

CN4 Switching output 1 (2-pin spring terminal, dark grey)

1 dark grey COMMON
2 dark grey NO

CN5 Switching output 2 (2-pin spring terminal, dark grey)

1 dark grey COMMON
2 dark grey NO

CN6 Switching output 3 (2-pin spring terminal, dark grey)

1 dark grey COMMON
2 dark grey NO

CN7 Switching output 4 (2-pin spring terminal, dark grey)

1 dark grey COMMON
2 dark grey NO

CN1 DMX Input / Output

1 grey GND
2 blue DMX - (signal complement)
3 orange DMX + (signal true)



Signal Indicators

The state of the demultiplexer card is signalled with two indicator LEDs.

green: OPERATION

red: ERROR (blinking)

Error blinking at data errors or loss of communication.

Wiring

To put the DMX relay interface SyncroSwitch to work, it must be wired properly. We strongly recommend to use fused line and load connections.

Output connectors: CN4 CN5 CN6 CN7

CN1: DMX IN

CN2: DMX Through

CN3: 24V DC



Start Address Switches

The DMX relay decoder SyncroSwitch has been preset to DMX start address 001. If another start address is required, it must be set using a start address board 3000P or 3003P. This start address board is optionally available. The SyncroSwitch can be operated with or without start address board attached. Use the BCD switches to set the DMX start address, that is the address of the first DMX channel (DMX data slot) used to switch relay output #1. setting is straightforward, no binary calculation required as is with DIP switches.

S3: Hundreds

S2: Tens

S1: Ones

Setting address 000 will disable all outputs and sett all outputs to OFF regardless of data received. To set a start adress other than 001 proceed as follows:

- unpower the unit
- open the interface by removing the top cover
- connect the address board 3000P or 3003P using the 10pin connector CN2
- set the desired address
- power up the decoder
- succesful programming will be indicated by the status LEDs, which should blink red - green four times. Similarly, the DIP settings (see below) must be programmed to the decoder.

DIP Switches

The interface can be configured using the start address board DIP switches. With start address board 3003P, DIP switch settings conform to functions F1..F4.

DIP SWITCH 1 DMX HOLD: default: off = no

When setting HOLD, the last valid setting will be retained at control signal loss. If DMX HOLD is not set, settings of DIP switch #2 will apply. S3 S2 S1

DIP SWITCH 2 OFF value: default: off = all outputs OFF

When DMX HOLD is not set, all outputs will be driven to the OFF state at loss of the DMX512 control signal. Setting DIP switch #2 will drive all outputs to ON instead.

DIP SWITCH 3, 4 Hysteresisdefault: off/off = trip point 50%/51%

These switches determine the ON and OFF trip points. Four settings are available:

DIP switch 3 4 trip points

OFF OFF 50% / 51%

ON OFF 25% / 75%

OFF ON 3% / 97%

ON ON 0% / 1%

Relay Types

This decoder is fitted with contact relays designed for a switching current of max 10A at 230V (resistive load only!). When selecting and ordering the appropriate relay card, please note, that all data given by the relay manufacturers are for RESISTIVE LOAD only. Incandescent lamps may be considered resistive loads. Switching inductive loads, such as transformers or solenoids, requires lower loads - we strongly recommend not to exceed 50% of the resistive load data. Besides, contacts may burn due to inductive spikes and sparks. Make sure to add protective circuitry (RC combinations, VDR resistors) if switching inductive loads. Switching inductive loads on the mains power supply may also generate high frequency noise and degrade the power supply quality. If switching capacitive loads (electronic ballasts or psu) inrush current limiting devices may be required to prevent contact damage. If in doubt pls consult the relay maker data sheet (OMRON, Type G2R-1-ASI, available at

DMX/RDM

The SyncroSwitch 4x RDM is compatible with ANSI E1-20 DMX RDM Version 1.0. Please note some special properties of devices complying with DMX RDM:

DMX HOLD properties are not supported by RDM standard ANSI E1-20. A factory specific command (DMX HOLD) has been added to compensate these restraints. Use parametrs 0...2 to set the desired HOLD mode:

- 0: no HOLD, all outputs OFF upon loss of signal
- 1: no HOLD, all Outputs ON upon loss of signal
- 2: DMX HOLD (last look remains active)

Setting the DMX personality reflects setting of DIP switches 3 and 4 (and vice versa).

NOTE: Once settings have benn changed using DMX RDM, the address switches become inactive (blocked). To re-enable start address switsches, temporarily set any address from 900...999 (simply set the „900“ digit). This will re-enable switches.



Maintenance and Cleaning

The device requires regular maintenance.

Carry out maintenance in accordance with the maintenance schedule:

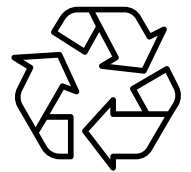
- If necessary, update your software version.
- Check, if all external cables are working properly.

Important information!

Maintenance must be carried out by qualified personnel only!

Protecting the environment

For the transport and Protective packaging, environmentally friendly materials have been chosen that can be supplied normally recycling. Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE).

FCC Statement

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

FCC Caution: Any change or modification to the product not expressly approved by SLH could void the user's authority to operate the device.

Synchronorm GmbH assures a 12 month manufacturer's guarantee for this specific Synchronorm unit, purchased by you. This guarantee only exists in accordance to the specific guarantee conditions laid down as follows:

The guarantee period starts with the purchase from a Synchronorm GmbH specialist dealer. In the event of a resale, the guarantee period will not start again.

If services by Synchronorm GmbH are provided under the terms of this guarantee, this does not lead to extension or renewal of the guarantee period. Your legal rights as a purchaser, especially those ensuing from the warranty, persist. They are not restricted by this guarantee.

Synchronorm warranties are limited to our product only and do not extend to any direct, indirect or subsequential loss under any circumstances.

Misusage of the device leads to a loss of guarantee!

Guarantee Conditions

SYNCRONORM GmbH guarantees impeccable, purpose-related properties and workmanship, expert assembly and proper functionality. Subject to our discretion, the guarantee refers to free-of-charge repair or free-of-charge supply of spare parts or of a replacement unit respectively. Should the unit type concerned no longer be manufactured, we reserve the right, at our discretion, to supply a replacement unit from our range that is closest to the type subject to complaint. Claims, the origin of which can be traced back to installation and operating faults as well as lack of care, e.g. the use of unsuitable cleaning materials or negligent maintenance, use other than that intended, damage due to accidents, falls, impact, effect of frost, cutting plugs, shortening cables, calcium deposits or improper attempts to repair the unit, are not covered by our guarantee. We hereby refer to the proper use as specified in the instructions of use that form an integral part of the guarantee. Wearing parts such as bulbs etc. are exempted from the guarantee.

The refund of costs for removal and installation, checks, claims for lost profit and damages are exempted from the guarantee together with further reaching claims for damages and loss of whatever nature caused by the unit or its use. The guarantee is only valid in the country in which the unit was purchased from a Synchronorm GmbH dealer. This guarantee is governed by German law under the exclusion of the agreement of the United Nations covering contracts, governing the international sale of goods (CISG) regulations. Guarantee claims can only be brought forward by presenting the sales receipt to

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by returning the unit or part of the unit's subject of complaint to us, freight free, at your own risk, accompanied by a copy of the original purchase receipt from the Synchronorm GmbH specialist dealer, this guarantee document and written information of the fault encountered.



