

- switched voltage 50V=
- switched current 3A
- switch-on delay up to 2 ms
- optically separated input
- built-in protecting diode

Application

The SF1-05-31 switching module is intended for electrical separation and switching of DC currents in the circuits of control systems, as well as there, where its function is suitable. The module's output must be only connected in the "lower" switch mode (opened drain MOSFET channel N). Concerning design, the SF1-05-31 switching module is intended for assembly in the electric cabinet, by means of standard 35 mm mounting rail.

Description

The SF1-05-31 switching module consists of input protecting circuit, matching the control voltage for optical component, which excites the output transistor trigger. The input circuit protects the optical component against control voltage of opposite polarity, as well as against exceeding of limit input current. At the same time, this circuit ensures also input's noise immunity. The output circuit contains the transistor MOSFET channel N having very low on-state resistance; thus, very low voltage drop is ensured at the on-state switch. A diode protecting against spikes is connected parallel to the transistor.

The input circuits may be excited with DC voltage 2.5 to 7V. The input circuits have very low consumption (about 5mA). A green light pilot-light indicates connected input voltage. Regarding the small values of voltage and currents, the shielded cables should be used for longer connecting distances (more then 10 m).

The SF1-05-31 switching modules may be assembled "side-by-side" onto the mounting rail; nevertheless, it is necessary to keep sufficient space above/under the modules, in order to enable good air circulation. In case of contactors' coils, brakes, connections, which are supplied from switching module's output, their coils needs to be equipped with damping components: varistors, RC-components (220nF+680Ω) or fast-operating diode (1N5365B). Such components need to be connected parallel to an inductive load (or the complex one).

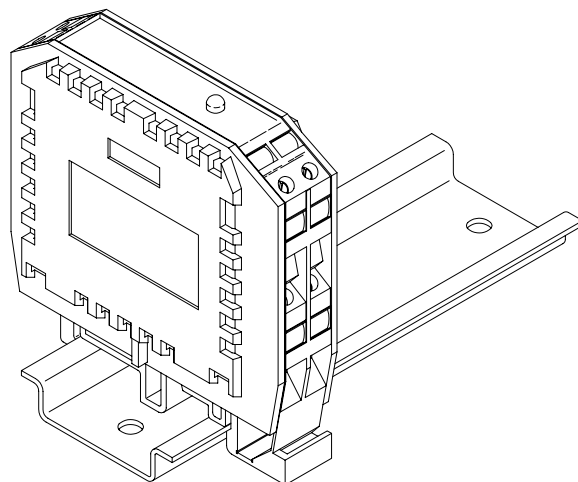
The SF1-05-31 switching module is designed as one printed-circuit board bearing whole electronic circuits, placed into standardized plastic box. This plastic box provides electric protection of IP20.

Absolute maximum ratings

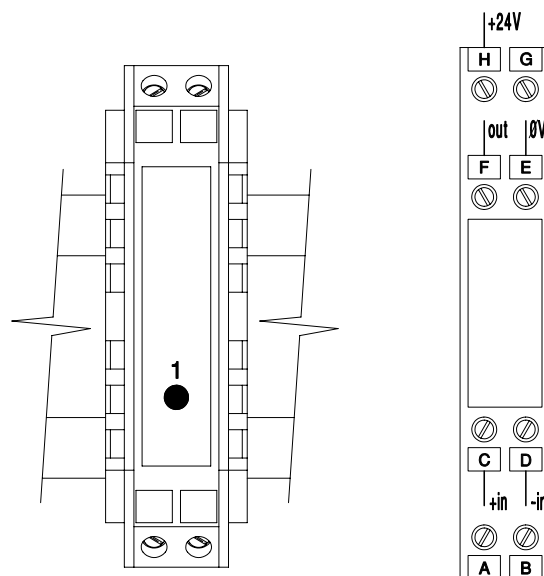
Maximum switched voltage	50V=
Maximum switched current after 0.1s.....	5A=
Maximum power dissipation ¹⁾	1.5W
Maximum voltage drop	0.2V=
Maximum input voltage.....	10V=
Maximum input current.....	30mA
Operation temperature range	-20°C to +50°C
Storage temperature range	-30°C to +80°C

Note¹⁾ Valid in case of module / ambient temperature up to 30°C. When operating at higher ambient temperature, the rated output current must be reduced (1,5% for each 1°C ambient temperature exceeding the 30°C).

Switching module SF1-05-31



Terminals



+in, -in input from 2.5 to 7V=
+24V= positive potential supplying the load ²⁾
out output 35V= / 3A
0V zero potential supplying load

Note²⁾: The +24V voltage must be always connected to the "H" terminal; otherwise the module may be damaged!

Operating status indication

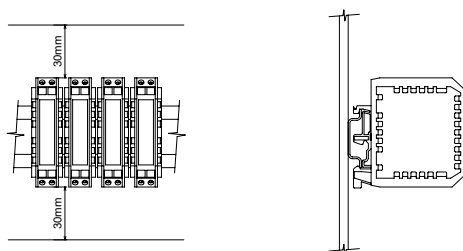
LED input voltage, green
 ACTIVE "IN" LED is shining
 PASSIVE "IN" LED is dark

Parameters

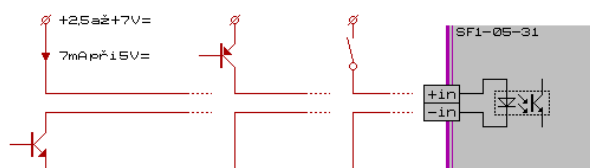
Switched voltage - rated	35V=
Switched current - rated	3A=
Minimum current through output switch	5mA
Power dissipation	about 1.5W
Voltage for excitation of input	2.5 to 7V=
Current into input	7mA at 5V=
Switch-on time	max 2ms
Switch-off time	max 1ms
Switching frequency	max 500Hz
Insulating voltage input/output	500V _{RMSV}
Terminals	screwed, for wires of 0.05 to 2.5 mm ²
Degree of protection	IP20
Dimensions (W×H×L)	62×65×18mm
Mounting position	vertical
Weight	0.08kg
Operating conditions.....	normal, no mechanic impurities
.....	no corrosive vapours/gases
.....	relative humidity 20 to 80%
.....	absolute humidity up to 40g/m ³
.....	barometric pressure 75 to 125kPa

Assembly

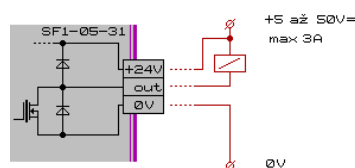
The SF1-05-31 switching module will be fixed onto 35mm mounting rail. To do this, proceed as follows: at first, set the upper clasp onto rail; then lock the ratchet by pressing downward. After sliding the module into desired position, connect the cables into terminals. When dismantling, at first disconnect the cables from the terminals; then release the ratchet using screwdriver, and, by pulling for lower nose on the box holder. See following illustration for preferred assembly position.



Example - Connection of input



Example - Connection of output



Caution

Before connecting/switching-on the module read this catalogue sheet carefully. In case of any doubt, please contact your local dealer or the producer.

When using the module, it is a good idea to consider some reserve, to cover the function in case of temporary aggravation of operational conditions (violent increase of ambient temperature, distortion, spikes, etc.).

The SF1-05-31 switching module doesn't require any attendance/maintenance; the repairs must be performed by producer. Any intervention into module's electric circuits causes loss of all warranties!

Never connect/switch-on the module that is damaged as a result of transport or due to any other influences!

Never connect the module to the voltage when it is dewy; wait until the visible moisture evaporates!

Before performing any operation on the terminals of the module, disconnect at first the module from the supply voltage!

The positive potential supplying the load (+24V) must be always connected to the "H" terminal; otherwise the module may be damaged!

Should the product be used in a way other as recommended by producer, the electrical/fire accident protection may be disturbed.

Others

This catalogue sheet serves also as accompanying document for the SF1-05-31 switching module.

The data contained in this catalogue sheet only describes the product's characteristics without ensure it. NEWTE undertakes no responsibility for wrong using of this catalogue sheet.

Considering the developing of each product, it is possible that there will be some improvements that cannot be included in this catalogue sheet. NEWTE retains the right anytime to modify and to improve described product without previous notice.

The technical suggestions and schemes included in this catalogue sheet express briefly the main purpose. The user has to judge separately the applicability for all individual cases. The modules stated in this description are in industrial terminology designated as "devices". Nevertheless, these aren't devices or machines capable to be directly used or to be directly connected to the electric network, but these are the components. The final function of such components is set when these are integrated into user's construction. Concerning conformity of such construction with existing legal rules, the responsibility for this fully rests on the user.

This instruction doesn't needs to be complete and error-free. In case of any doubt, please contact your local dealer or producer.