

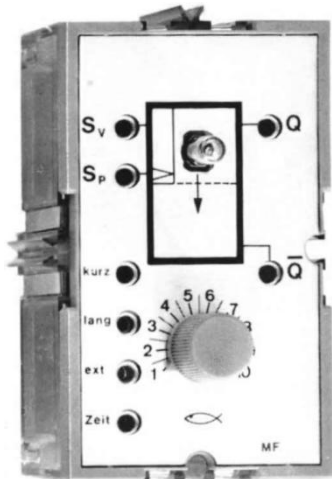
fischertechnik h4 MF

MONO-FLOP

Electronic-Module

Order No. 30816





"kurtz" = short
 "lang" = long
 "ext" = external
 "Zeit" = time

Technical Data:

Rated operating voltage: 9 Volt DC $\pm 20\%$
 Signal Lamp: 6V, 20mA
 Current Consumption Q = "0" 19mA
 Q = "1" 26mA
 Output Q and \bar{Q} : load max. 20mA

Pre-selectable time ranges, intermediate values can be adjusted with the rotary knob.

Bridge: "time" – "short": 20ms – 2.5s.
 "time" – "long": 400ms – 60s.

For shorter times use a capacitor $\leq 2.2\mu\text{F}$ and
 For longer times use a capacitor $\geq 50\mu\text{F}$ connected to
 "ext." and "time"
 "+" of capacitor must be connected to "time".
 Max. input frequency
 (Bridge between socket "time" and "short") 2kHz

The mono-flop module provides numerous possibilities for controlling and regulating light, heat and sound as the hobby 4 kit shows.

The mono-flop is used to build time circuits for delaying or extending signals. It is also called a "monostable multivibrator".

Before starting, please insert one of the two signal lamps supplied into the socket. The MONO-FLOP module is automatically connected to power by attaching the module to a rectifier or other module and inserting the enclosed red connector.

The operation of the MONO-FLOP building block is best understood by means of a simple test. The following signal definitions apply to the entire fischertechnik electronics system:

0-Signal	The corresponding socket carries the Voltage $V \geq 3V$
1-Signal	The corresponding socket carries the Voltage $V \leq 2V$
dynamic	
1-Signal	Signal change from "0" to "1", e.g. Switching from "+" to "-" ("0"- "1" transition)

Under no circumstances should the 0-signal be confused with a missing signal (= input terminal not connected).

The mono-flop has 2 inputs: Sp and Sv. It can be seen in the diagram on the module, a symbol for a "dynamic" input (the open arrow tip!). The input Sp is a "pulse" input (it operates when a transition occurs).

For your first test, connect the "time" socket and the "long" socket and set the rotary knob approximately to position "5".

If neither of the two inputs is connected, the output Q carries a 0-signal. (The inverse output \bar{Q} correspondingly is set to a 1-signal.) A "0" – "1" transition at the input Sp leads to the output Q providing a 1-signal for the set time duration. The signal light is lit during this interval. (A "0 – 1" transition is obtained by connecting the socket Sp first with "+" and then with "-"). At the end of the time interval, the output $Q = 1$ returns to $Q = 0$ and the lamp turns off. The time of operation of the signal lamp ($Q = "1"$) can be adjusted with the rotary knob. For the setting ranges see the technical data.

The second input Sv, the "preparation or enable input", can be used to block or inhibit the mono-flop's operation. To do this, Sv must be connected with "+" ($Sv = "0"$). If, on the other hand, $Sv = "1"$ (or not connected), the mono-flop module operates as described.

The outputs Q and \bar{Q} can be used to control other electronic components. However lamps, motors etc. must not be connected directly, they can only be controlled via the relay module.

Further explanations and suggestions for model building can be found in the hobby-experiment and model books, volumes 4-3 and 4-4.

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