

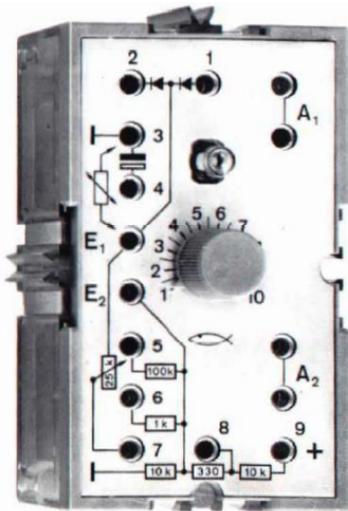
fischertechnik h4 G

BASIC-BLOCK

Electronic-Module

Order No. 30813





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www.procontechology.com.au
 with the assistance of Google.

Technical Data:

Rated operating voltage:	9 Volt DC $\pm 20\%$
Max. Output load capacity:	20mA
Signal Lamp:	6V, 20mA
Current consumption at rated voltage, A not connected, 1k Ohm between E ₁ and minus (socket 3) and bridge from socket 7 to 9.	
Rotary knob in position "1", A ₁ = "0"	38mA
Rotary knob in position "10", A ₂ = "1"	30mA
Permissible resistance of the control sensor:	0 - 500k Ω

The electronic BASIC module corresponds to the building block of the same name in the hobby 4 kit. It is needed when moving from the electronic kit ec to the hobby 4 kit. It is equally important for the extension of this kit.

Before starting, please insert one of the two signal lamps supplied into the socket. The BASIC module is automatically connected to power by attaching the module to a rectifier or other module and inserting the enclosed red connector. The "supply voltage" is also available at socket 9 ("+" and socket 3 ("- or ground).

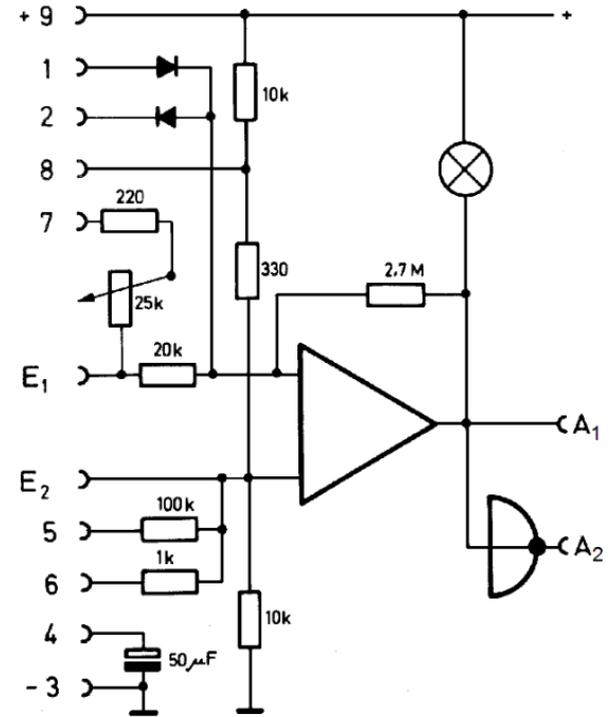
In principle, the BASIC module is a differential amplifier with connectable feedback, which can be used in the following basic circuits:

1. Limit-value switch (comparator)
2. Limit-value switch with hysteresis
3. Pulse storage (one-shot capture)
4. Clock (about 0.5Hz to 20kHz)
5. Time delay switch (max. 10 sec.)

Only an electronics expert can see which connections have to be made for the individual circuits from the circuit diagram (note the protective resistors are not shown!). It is recommended to test the circuits using the hobby experiment and model books, volumes 4-1 and 4-2.

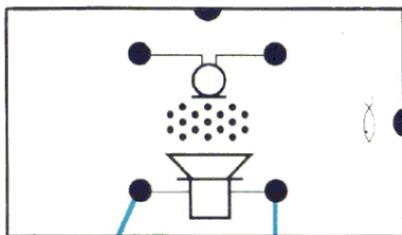
Use as an input control device: photo-resistor (light sensor), positive or negative thermistor (temperature sensor), microphone (sound sensor) or magnet (inductive sensor).

The module has 2 outputs: A₁ and A₂. The output A₂ is the inverse of A₁. The built-in signal lamp indicates the switching state of the output A₁.

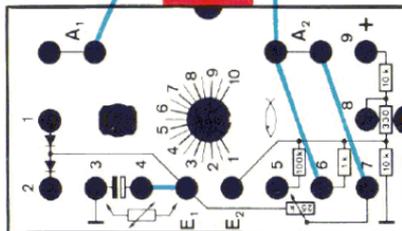


Note: Because the maximum output current capacity is 20mA, an incandescent lamp, a motor or similar device must not be connected to either of the two outputs. If these need to be controlled by the basic module, a relay module must be connected in between. However, all purely electronic components of the fischertechnik system (other electronic components, AND-NAND, OR-NOR modules, mono- or flip-flops) can be directly controlled.

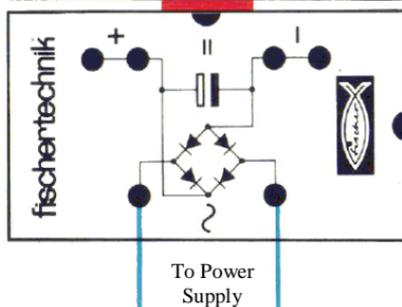
The function of the BASIC block can be checked using the following clock circuit.



Microphone-Loudspeaker



Basic Block



Rectifier

At position 1 of the rotary knob, the signal lamp flashes many times in a second. In position 10 it flashes approximately every 5 seconds.

If E_1 is connected to socket 3 ("–") instead of socket 4 via the supplied 100nF capacitor, the frequency can be set to the ultrasonic range (over 20kHz).

If you connect socket A_2 to sockets 7 and 5, the "clock frequency" (with knob position 1) is within the audible sound range: the frequency is so high that the lamp can no longer follow the change and it operates continuously, albeit dimmer. The "clock circuit" has now become a "tone generator".

You can convince yourself of this fact by connecting the output sockets A_1 and A_2 to each socket of the fischertechnik loudspeaker module. By turning the potentiometer knob you can produce higher or lower tones.

The inbuilt diodes (sockets 1 and 2) can be tested with one of the circuits given in the hobby experiment and model book 4, volume 2.

The following signal definitions apply to the 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).