

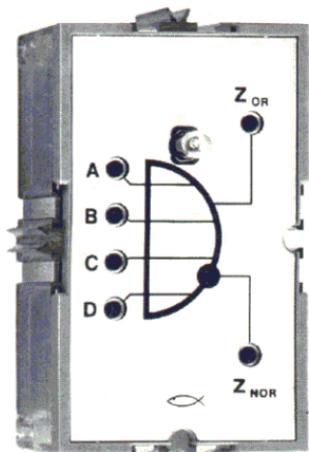
fischertechnik h4 ON

OR-NOR

Electronic-Module

Order No. 30818





Technical Data:

Rated Operating Voltage	9 Volt DC $\pm 20\%$
Signal Voltage (nominal)	0-Signal: $\geq 3V$ 1-Signal: $\leq 2V$
Max. Load capacity of the Outputs	20mA
Signal Lamp	6V, 20mA
Current Consumption (nominal)	
ZOR = "1"	$\approx 27mA$
ZOR = "0"	$\approx 21mA$
Signal Transition Time	from "0" to "1" $\approx 20\mu s$ from "1" to "0" $\approx 5\mu s$
Max. Input Frequency	$\approx 25kHz$

With this block a maximum of 4 electronic modules can be used as inputs, e.g. Building blocks with connected photo-resistors, mono-flops or flip-flops, to a new input signal.

Before starting, please carefully insert one of the two signal lamps supplied into the socket. The OR-NOR module is automatically connected to power by attaching the module to a rectifier or other module and inserting the enclosed red connector.

Note: because the maximum permissible output current is 20mA, all fischertechnik electronics modules can be controlled with the OR-NOR module, but lamps, motors and similar devices cannot be connected directly, but only by using the relay module.

The operation of the OR-NOR 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 OR-NOR module has 2 outputs Z_{OR} and Z_{NOR}. Output Z_{NOR} is the inverse of Z_{OR}. This output therefore provides the opposite signal to Z_{OR}.

The signal lamp indicates the state of the output Z_{OR} . It lights up when $Z_{OR} = 1$ and it goes out when $Z_{OR} = 0$.

The OR-NOR block has 4 inputs: A-B-C-D. The OR condition requires the 1-signal to appear at the output Z_{OR} if a 1-signal is present at, at least, one of the inputs: A-B-C-D. The former is the case when one or more inputs are connected to "-".

Note: When an input is not used, it is as if a 0-signal is present on it. This has the advantage that the module works correctly with only 2 or 3 inputs used, without the need to make connections to the unused inputs.

Conversely, the signal lamp does not light up when a 0-signal is present at the output if none of the 4 inputs is connected to "-", i.e. no 1-signal is present at any of the inputs.

If less than 4 inputs are required for a control circuit, only the required ones are connected. A non-connected input acts as if it had a 0-signal. This allows you to use this module as a universal OR-NOR circuit with 2 to 4 inputs.

Perhaps you will notice that the signal light is lit when input A or input B or input C or input D is connected with "-".

Further explanations and suggestions for model building can be found in the hobby experiment and model book, volume 4-4.

Translated by: Peter King,
www.procontechonology.com.au
with the assistance of Google.