

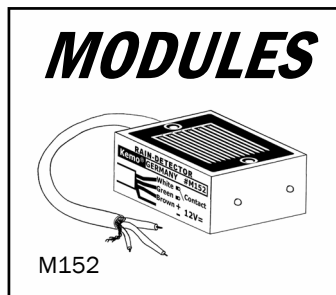
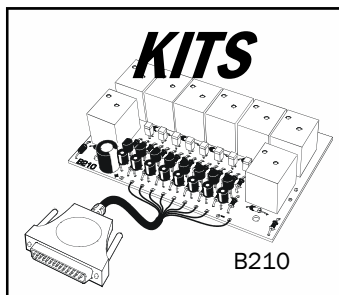
Kemo®

Electronic

MM MOODY
INTERNATIONAL
Zertifiziertes QM bzw. UM-System

2009/10

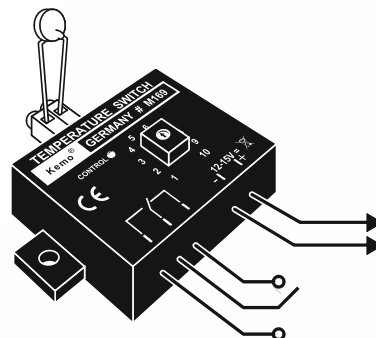
EURO 3.00



M169 Temperature switch - thermostat 12 V=

Adjustable electronic temperature switch. Operating voltage: 12 V...15 V= stabilized (max. 0,1 A). Temperature range: approx. 0...100° C. Switching output: relay contact 1 x switch-over max. 5 A/25 V. The sensor (Ø 5 mm) may be connected with the control electronics via a cable with a length of up to 1 m. Dimensions: approx. 60 x 45 x 25 mm

Price: 13.40 €



NEW NEW NEW NEW

Preface

Modern electronics signifies not only a fascinating hobby but also will be profitable with regard to profession. The company Kemo produces for the last 35 years interesting, instructive electronic kits, modules and devices. Due to our range of more than 350 different products we are an important manufacturer on this market. Our range of articles is continuously developed and modernized. All products have been developed in our company and carefully tested and checked before set into series production.

We also dispose of an own plastic injection moulding department for the production of plastic parts.

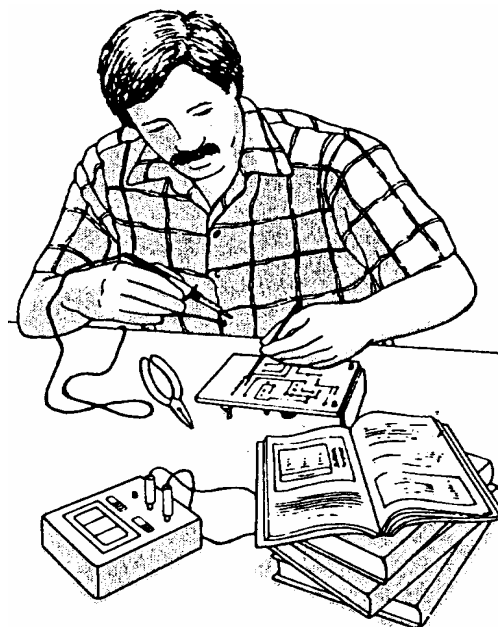
Multilingual descriptions are attached to the kits and modules. New developments are already supplied with descriptions in 8 different languages: German, English, French, Spanish, Dutch, Finnish, Portuguese and Russian.

If you wish to inform yourself about our products in advance, please visit our website: **www.kemo-electronic.eu**

You will find detailed product information and answers to frequently asked questions there and you may download our software which is needed to operate some of our products free of charge.

Klaus Kernchen + staff members of the company Kemo

The prices are
recommended selling-prices.



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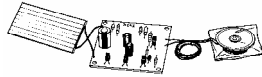
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<http://www.kemo-electronic.eu>

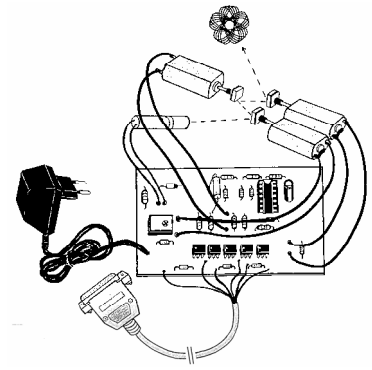
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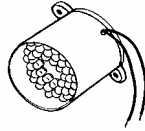
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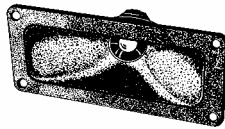
Kits + modules for computer
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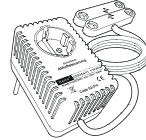
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Loudspeaker

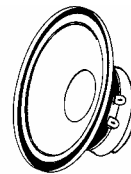


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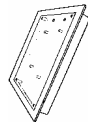
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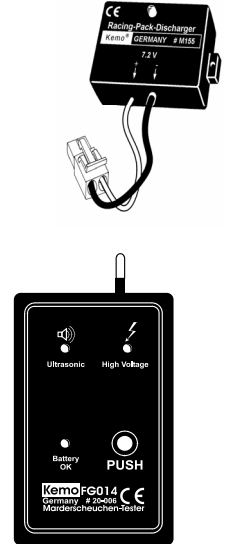
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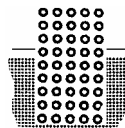
Cases + div. plastic parts
Accessories



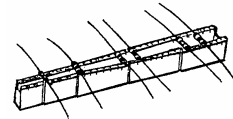
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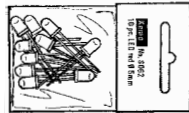
Boards and accessories



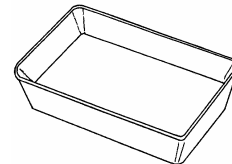
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Assortments etc.



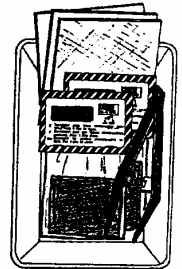
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Resistance wire
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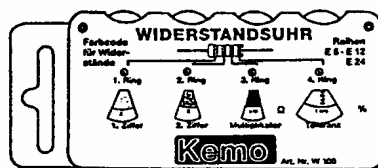


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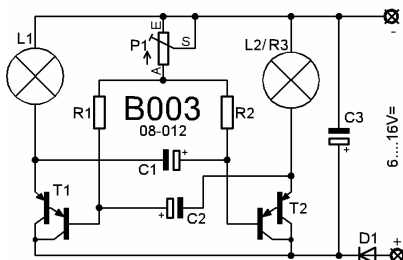
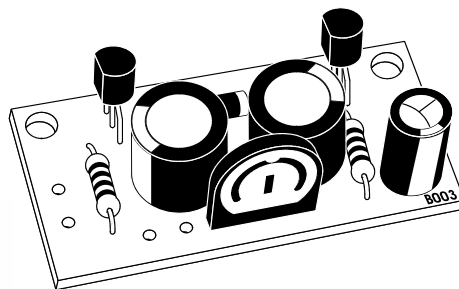


B003 Flasher / Alternating flasher for 2 small lamps

...makes the connected small lamps flash at an adjustable flashing speed. To be used as flasher or alternating flasher. For small lamps 6...16 V, max. 300 mA (as flasher) or 2 x max. 300 mA (as alternating flasher). Flashing speed: approx. 1...3 x per sec.

Technical data:

Operating voltage: 6...16 V=
 Max. load: 0,3 A per output (2 outputs available)
 Flashing speed: adjustable, approx. 1...3 times per second
 Board dimensions: approx. 45 x 22 mm



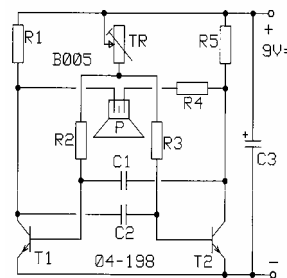
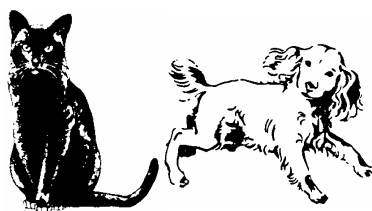
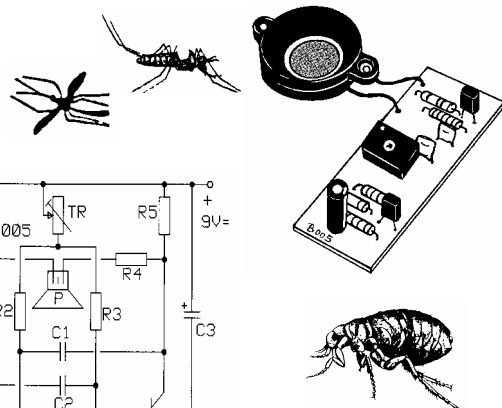
Price: 3.00 €
Fitting case: G027

B005 Mosquito banisher, flea and tick banisher

...banishes through a high pitched whistling sound the annoying mosquitoes. For 9 V=. Flea and tick banisher: switchable to higher frequencies in order to shoo away vermins at dogs, cats, domestic animals, etc.

Technical data:

Operating voltage: 9 V=
 Input current: < 7 mA
 Frequency: adjustable
 Transducer: 1 piezo loudspeaker, enclosed
 Board dimensions: approx. 20 x 55 mm



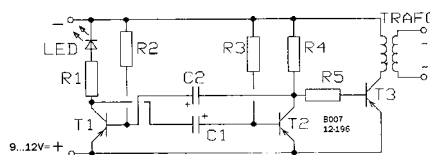
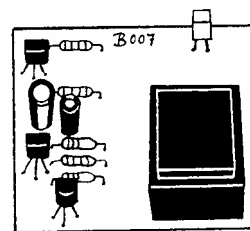
Price: 3.90 €
Fitting case: G01B

B007 Electrostat apparatus

...produces from 9...12 V= battery voltage pulsating high-voltage pulses of approx. 80...500 V. Usage: As joke, for use in physical tests or in order to catch earthworms required for fishing.

Technical data:

Operating voltage: 9...12 V=
 Output pulse: 80...500 V
 Board dimensions: approx. 45 x 55 mm



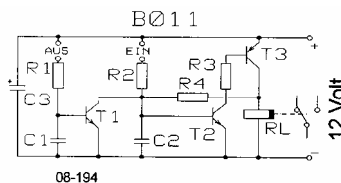
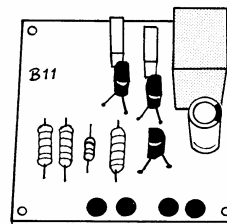
Price: 5.80 €
Fitting case: G022

B011 Sensor touch switch

Through soft touching of the sensors with the fingers, nose, etc. it is possible to connect and switch off devices (through a relay). Operating voltage: 12 V=. Ideal as secret switch (screw heads), as original bell, for use in hidden switches, etc.

Technical data:

Operating voltage: 12 V=
 Relay contacts: 1 x change over, max. 3 A capacity
 Board dimensions: approx. 55 x 44 mm



Price: 10.80 €
Fitting case: G027

B014 27 MHz transmitter 6 W

Measuring transmitter: approx. 25...30 MHz. AM + FM modulation. For 9...24 V. Max. power 6 W input with 24 V. Take into account to observe the legal regulations of telecommunication! In Germany the possession of this device is only allowed to persons holding a permission or to dealers.

Attention: Only radio amateurs who demonstrably have a licence are allowed to possess this kit (CCT-Law within the EEC)!

Technical data:

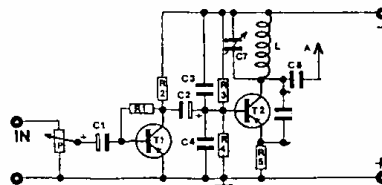
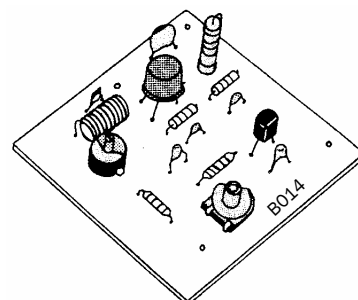
Transmitting frequency: approx. 25...30 MHz (adjustable)

Operating voltage: approx. 9...24 V

Input power: max. 6 W

Modulation method: AM + FM

Board dimensions: approx. 50 x 50 mm



Price: 10.80 €
Fitting case: G01B

B015 Fog horn, 5 W

...generates a deep, noisy sound similar to the fog-horns of ships. Operating voltage: 4,5...12 V=.

Power: max. 5 W depending on the voltage. For 8 Ohm - loudspeakers.

Technical data:

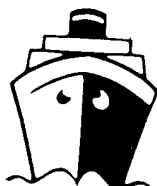
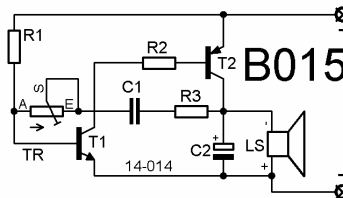
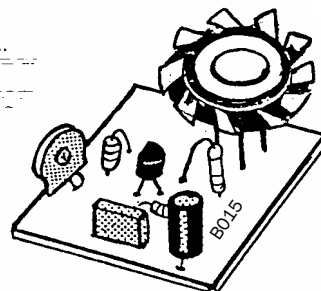
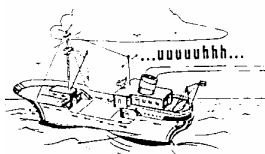
Operating voltage: 4,5...12 V=

Frequency of tone: adjustable

Loudspeaker connection: 8 Ohm

Power: max. 5 W

Board dimensions: approx. 25 x 27 mm



Price: 3.80 €
Fitting case: G027

B022 6-Channel lighting console

Stereo lighting console with 2 microphones (2 x 3 channels). Each channel is adjustable individually. Lamps up to max. 500 W (220...240 V~) can be connected per channel. High input response! For discotheques, party rooms etc.

Technical data:

Operating voltage: 220...240 V~

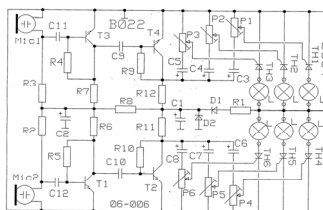
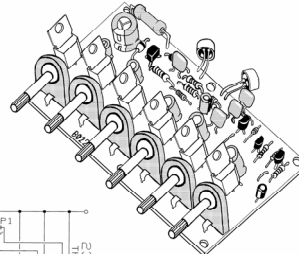
Loading capacity: incandescent lamp load max. 500 W per channel (= total loading capacity 3.000 W)

Controller: one controller per channel (total 6 pieces)

Control of lamps: half-wave control with thyristors

Signal pick-up (music): via 2 electret capacitor microphones

Board dimensions: approx. 105 x 55 mm



Price: 11.80 €
Fitting case: G086



B025 U-Stroboscope

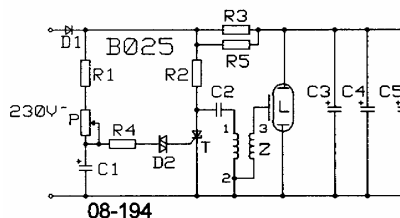
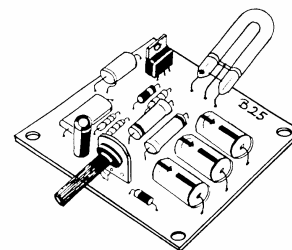
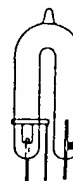
Flashlight-stroboscope with U-flash tube and large charging capacitor for bright flashes. Adjustable speed: approx. 1...10 Hz. For 230 V~. Ideal as light-shows for discotheques, for special-effect photography, etc.

Technical data:

Operating voltage: 230 V~

Sequences of flashes: adjustable, approx. 1...10 Hz

Board dimensions: approx. 60 x 62 mm



Price: 11.80 €
Fitting case: G089

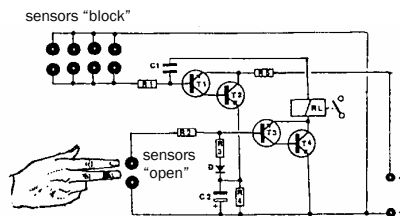
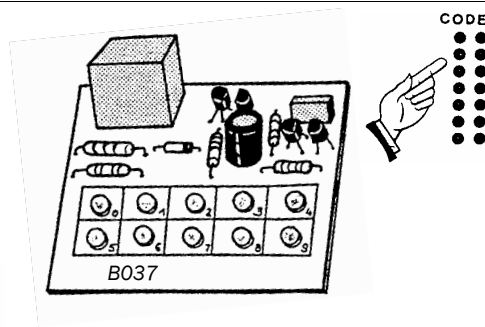
B037 Sensor number lock

Electronic "sensor" number lock. Touching the correct numbers a relay will operate. In case that false numbers are touched, the lock will block automatically for some time. The number can be preset freely. Operating voltage: 12 V=.

Usage: For opening doors and gateways without keys, to switch machines and electronic devices, which should not be operated by unauthorized persons (through latching relay). For selfmade electric locks at safes and partition for valuables etc.

Technical data:

Operating voltage: 12 V=
 Number of sensors: 10 pieces (numbers 0...9)
 Load relay: approx. 5 A, 1 x change over
 Board dimensions: approx. 60 x 50 mm

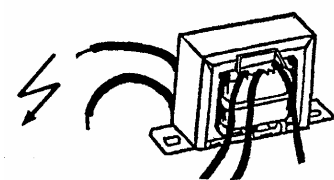


Price: 5.80 €
Fitting case: G010

TR01 Transformer for converter

This transformer is especially suitable for a push-pull DC-voltage converter of 12 V up to 230 V~. It can be used directly when working with our converter-kit B038. The maximal output power of this transformer is about 40/50 W.

Packed in a carton.
 Dimensions: approx. 76 x 69 x 59 mm



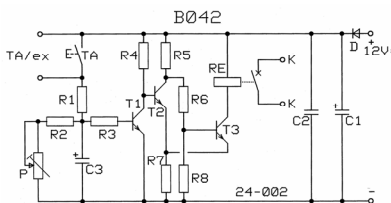
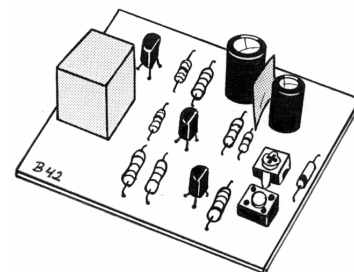
Price: 21.60 €

B042 Time switch (short) approx. 2 sec...5 min.

After pressing the key the installed relay switches on for approx. 2 seconds up to approx. 5 minutes (adjustable) and then switches off again. Operating voltage: 12 V=. Relay contact: 1 x ON, max. 25 V, 3 A.

Technical data:

Operating voltage: approx. 12 V=
 Power consumption: approx. 40 mA
 Switching times: approx. 2 sec. ...5 min. adjustable
 Relay-breaking capacity: max. 3 A max. 25 V
 Board dimensions: approx. 54 x 44 mm



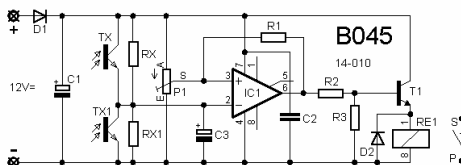
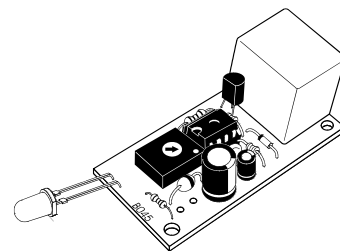
Price: 5.80 €
Fitting case: G024

B045 Light barrier 12 V=

...switches a relay on if there is light or darkness (shadow). Application: if the light ray of a lamp at doors, windows, etc. is interrupted by a person, the relay connects. May also be used as twilight switch.

Technical data:

Operating voltage: 12 V=
 Current consumption: < 100 mA
 Relay contact: 1 x ON max. 3 A max. 25 V
 Sensitivity: adjustable
 Designed for visible light
 Board dimensions: approx. 55,6 x 26,7 mm



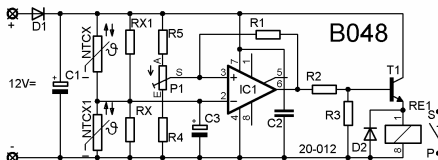
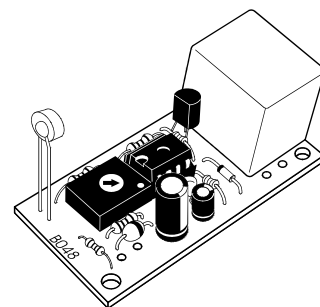
Price: 7.80 €
Fitting case: G027

B048 Temperature switch 12 V=

...switches according to a preset temperature a relay on or off. Ideal as thermostat, ice alarm, fire detector, etc. Temperature range: approx. -30 °... +150 °C. Relay contact: 3 A.

Technical data:

Operating voltage: 12...14 V=
 Current consumption: approx. 100 mA at maximum
 Temperature switching range: approx. -30 °... +150 °C
 Relay contact: 1 x ON
 Contact capacity relay: max. 25 V, 3 A
 Board dimensions: approx. 55,6 x 26,7 mm



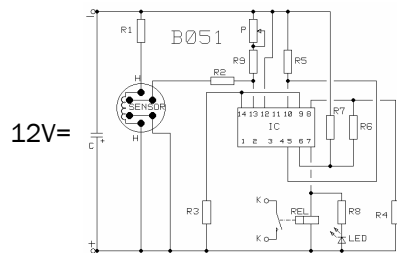
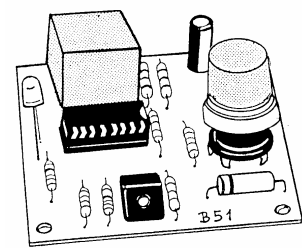
Price: 7.80 €
Fitting case: G027

B051 Gas sensor - Spirits tester

This instrument indicates gases such as alcohol, acetone, benzole, propane, carbon monoxide (contained in the smoke of fire). Perfect as alarm for gases + fire. Operating voltage: 12 V=, approx. 150 mA, indication: LED and relay (1 x ON 3 A).

Technical data:

Operating voltage: 12 V=
 Relay: 1 x ON, 3 A
 Board dimensions: approx. 55 x 45 mm



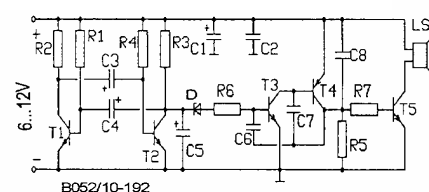
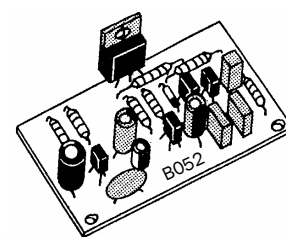
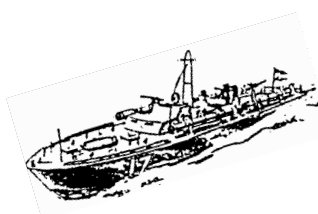
Price: 11.80 €
Fitting case: G024

B052 Destroyer siren

Warship siren "Clear decks for action". In rapid intervals sounds a shortly swelling tone: Uuiit... Uuiit... Power: 3...15 W, depending on the operating voltage. For 6...12 V=. For loudspeaker connection 8 Ohm.

Technical data:

Operating voltage: 6...12 V=
 Output power: approx. 3...15 W
 Loudspeaker power: 8 Ohm
 Board dimensions: approx. 55 x 31 mm



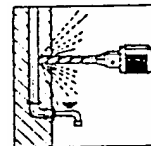
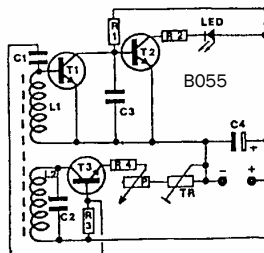
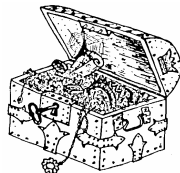
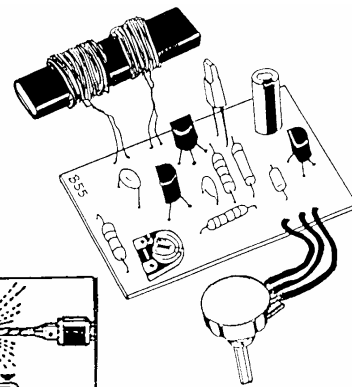
Price: 10.80 €
Fitting case: G027

B055 Metal searching device

The device locates any metal element till a maximum of 60 mm in walls, floors, etc. Indication is realized through LED. The sensitivity is adjustable. With the help of the ferrite antenna exact locating is possible.

Technical data:

Operating voltage: 9 V=
Sensitivity: adjustable
Detecting depth: max. 60 mm
Board dimensions: approx. 55 x 32 mm



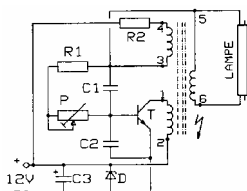
Price: **5.80 €**
Fitting case: **G01B**

B060 Fluorescent lamp voltage transformer

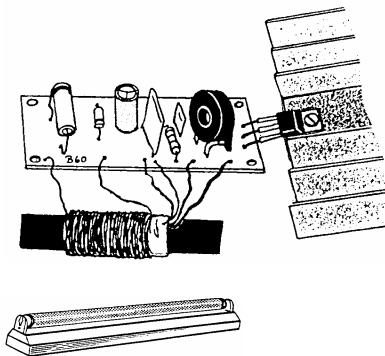
...with this set fluorescent lamps 8...40 W (ideal 18 W) can be operated directly through a 12 V car battery. The light is as result of the high frequency without any flickering and considerably brighter then similar glowlamps. Ideal for weekend-houses, camping etc.

Technical data:

Operating voltage: 12 V=
Suitable fluorescent lamps: 8...40 W
Working frequency: > 1000 Hz
Brightness: adjustable
Board dimensions: approx. 50 x 21 mm



Fluorescent lamp



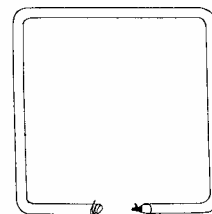
Price: **10.80 €**
Fitting case: **G010**

P1089R Neon lamp - Red P1089G Neon lamp - Green P1089B Neon lamp - Blue

Perfect for neon pictures, decorative lighting in bars, etc.
The lamp also works with the Fluorescent lamp voltage transformer B060.

Technical data:

Operating voltage approx. > 1500 V
Dimensions: approx. 75 x 75 mm, Ø 4 mm



Price: **10.80 €**

B062 Infrared light barrier - range > 18 m -

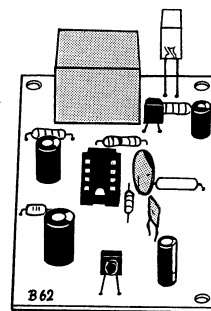
Light barrier with invisible infrared light beam. Transmitter and receiver included! Operating voltage: transmitter 9 V=, receiver 12 V=, relay 1 x ON max. 3 A. Ideal for alarm systems, automatic animal picturing, remote control for garage doors, etc. With incorporated infrared filter for day operation!

Technical data:

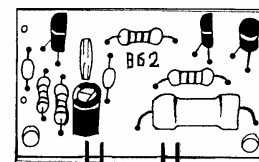
Operating voltage: 9 V= transmitter, 12 V= receiver
 Transmitting power: adjustable
 Relay contacts: 1 x ON, max. 3 A
 Board dimensions receiver: approx. 55 x 44 mm
 Board dimensions transmitter: approx. 23 x 45 mm

Recommended tilted mirror if the infrared ray shall be deviated.

K002 Reflector Mirror, see page 70

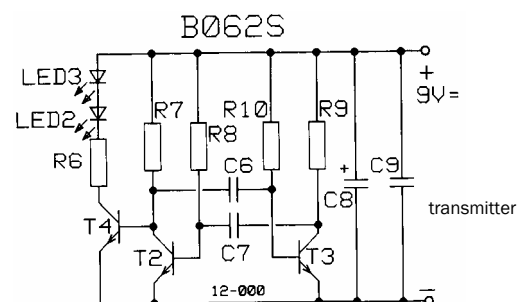
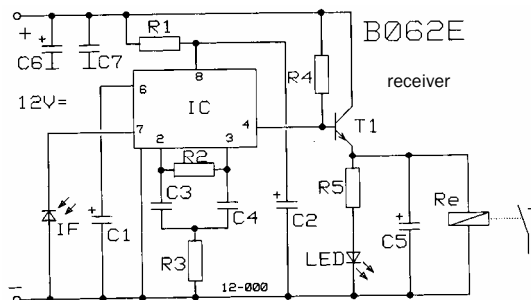


receiver



transmitter

Price: 13.80 €
Fitting cases: G026+G027



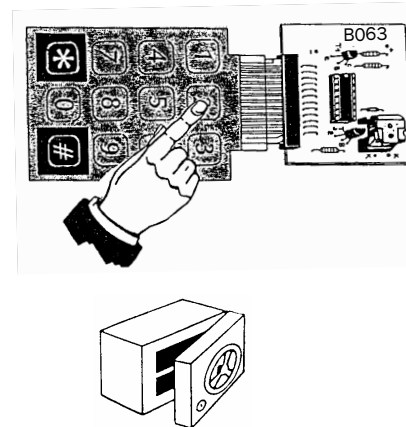
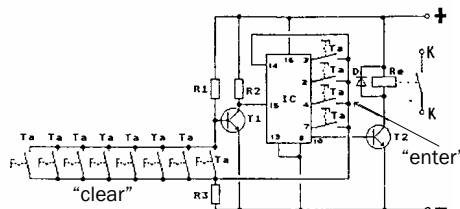
B063 Digital number lock with super-flat foil keyboard!

After typing in any four-figure number, the relay will pull up. The code number can be programmed freely and is easily changed. Relay contact: 1 x IN max. 5 A load. Operating voltage: 6 V=. Usage: As doorlock without using a key, to switch on devices (radio, TV sets, machines, etc.) which should not be operated by strangers. Even suitable for safe doors!

Technical data:

Operating voltage: 6 V=
 Relay contacts: 1 x IN, 5 A
 Order of figures: four-figure
 Board dimensions: approx. 55 x 55 mm

Price: 7.80 €
Fitting case: G010



B065 Voltage transformer input: 6...12 V=, output: 12...30 V=, approx. 1,5...1 A

Electronic transformer for direct voltage. The altitude of the output voltage can be limited electronically. A heat sink approx. 8 x 8 x 2 cm is still necessary.

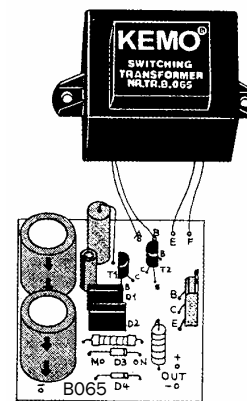
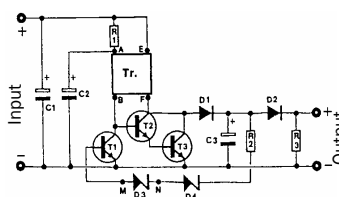
Application: for operation of appliances with a higher operating voltage (e.g.: power amplifiers, CB-radios) at a 6 V or 12 V car battery.

Output: for operation from 6 V to 12 V: approx. 1 A. At input 12 V and output 15...30 V between 1,5...1 A, the higher the output voltage, the less the current.

Technical data:

With input power 6 V: output 12 V= max. 1 A
 With input power 12 V: output 15...30 V=, max. 1,5...1 A
 Required cooling unit: 8 x 8 x 2 cm or greater
 Board dimensions: approx. 55 x 55 mm

Price: 18.90 €
Fitting case: G010



B069 Listening-stethoscope 9 V=

You are able to listen through thin walls, doors, windows, etc. Highly sensitive preamplifier with microphone capsule and headphone. To be used for observing animals (e.g. mice), as baby-alarm etc. UB: 9 V=.

Attention: It is prohibited on penalty to bug the conversations of other people as well as to eavesdrop on other flats through doors and windows!!

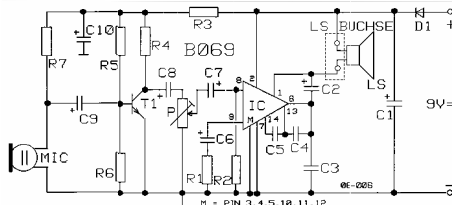
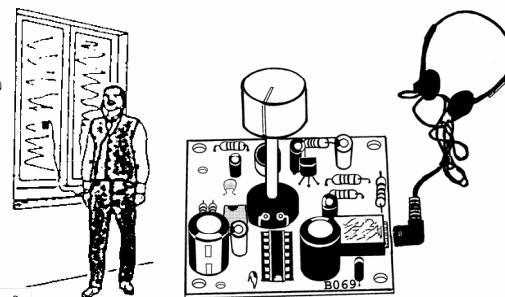
Technical data:

Operating voltage: 9 V=

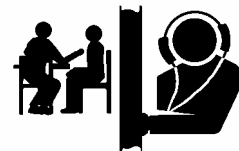
Power consumption: < 100 mA

Output power max. 0,5 W at 8 Ohm loudspeaker

Board dimensions: approx. 57 x 57 mm



Price: 11.80 €
Fitting case: G081



B073 Pre-Amplifier, universal super wideband: approx. 10 Hz...150 kHz

2-step preamplifier for 12...30 V= operating voltage. Input: 2...20 mV, output: 200 mV...2 V. Application: pre-amplifier for high-power amplifier, headphones-amplifier, etc.

Technical data:

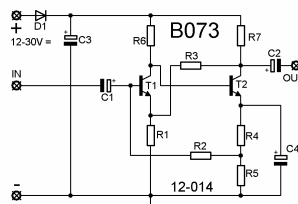
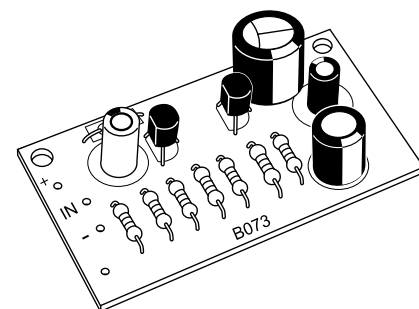
Operating voltage: 12...30 V=

Input sensitivity: approx. 2...20 mV

Output: approx. 200 mV...2 V

Structure: 2-stage

Board dimensions: approx. 54 x 29 mm



Price: 3.80 €
Fitting case: G027

B077 Martin siren - german police siren 12 V= max. 15 W!

Especially high-powered siren with the tune similar to the german police siren: tatü...tatü...tatü. For loudspeaker connection: 8...16 Ohm.

- Forbidden to be used for road traffic -

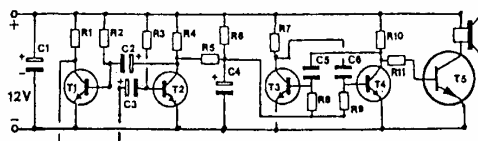
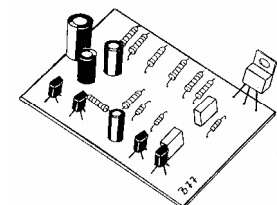
Technical data:

Output power: max. 15 W

For loudspeaker: 8...16 Ohm

Operating voltage: 12 V=

Board dimensions: approx. 55 x 43 mm



Price: 10.80 €
Fitting case: G082



B081 Deftness game

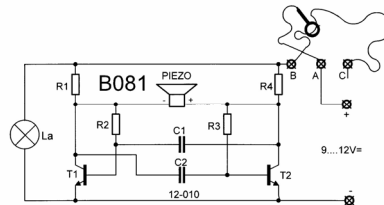
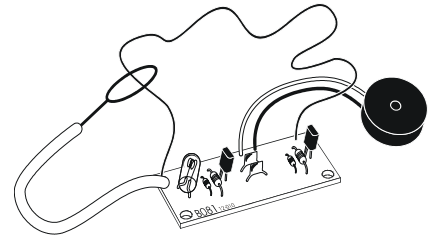
The matter is to pass a small wire loop through a thread wire with a lot of bends and obstacles. The person who touches the thread wire with the wire loop, will release an acoustic and optic signal. An interesting game for parties and for neverending evenings. Operating voltage: 9...12 V=.

Technical data:

Operating voltage: 9...12 V=

Error indication: optical + acoustical

Board dimensions: approx. 45 x 19 mm



Price: 3.80 €
Fitting case: G027

B085 Parabolic-microphone

This highly sensitive microphone is able to receive after being fitted in a half-ball-shaped reflector (eg. a divided play ball) noises and words from more than some hundred meters. Ideal for observing animals, for detectives etc. For headphone connection 8 ohm. Operating voltage 9 V=.

Technical data:

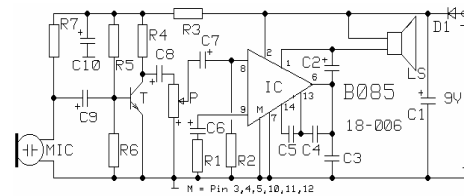
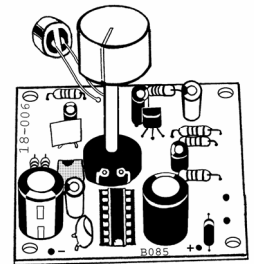
Acoustic sensor: high-sensitive FET capacitor microphone

Sensitivity: adjustable

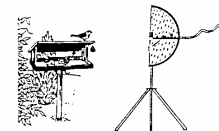
Operating voltage: 9 V=

Power consumption: max. approx. 230 mA

Board dimensions: approx. 56 x 56 mm



Price: 9.80 €
Fitting case: G081



B088 Mini traffic light

3 small light emitting diodes red-yellow-green will be lighted up in a slow sequence one after another. The control may also control a complete crossing with 4 traffic lights. The additional LED's are not included in the construction set.

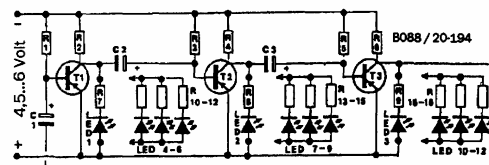
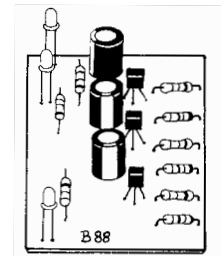
Technical data:

Operating voltage: 4,5...6 V=

Switching: 3 (red-yellow-green)

Switching sequence: slowly

Board dimensions: approx. 43 x 34 mm



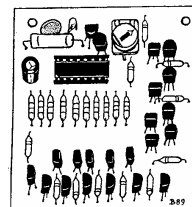
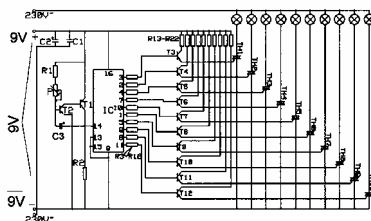
Price: 8.10 €
Fitting case: G027

B089 10-Channel running light 230 V~ + 9 V=

This digital 10-channel running light controls 10 different lamp outputs one after another and in regular intervals, lighting up the corresponding lamps one after another. For 230 V~ glow lamps, max. 100 W per output. The velocity is adjustable. The device works with fullwave control.

Technical data:

Operating voltage: 230 V~ + 9 V=
 Power per channel: max. 100 W glow lamp load
 Running velocity: adjustable
 Board dimensions: approx. 62 x 67 mm



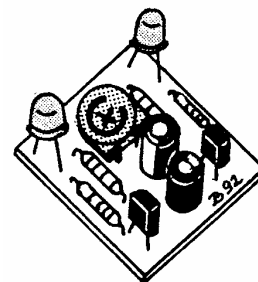
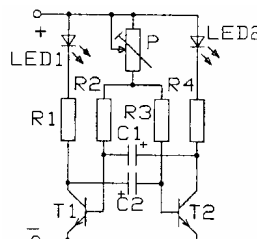
Price: 16.30 €
Fitting case: G081

B092 LED-alternating flasher

2 differently coloured light emitting diodes will flash alternately. Adjustable flashing velocity. Operating voltage: 6...12 V= (9 V battery). Usage: flashing adornments, name-plates, for miniature constructions etc.

Technical data:

Operating voltage: 6...12 V=
 Power consumption: approx. 20 mA
 Flashing frequency: adjustable
 Board dimensions: approx. 24 x 26 mm



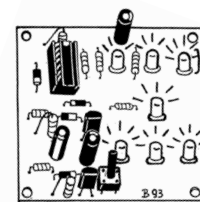
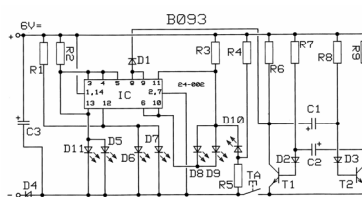
Price: 3.80 €
Fitting case: G01B

B093 Electronic dice

After pressing a key this digital die indicates depending on chance a number between 1...6. Indication takes place via LED's.

Technical data:

Operating voltage: 6 V battery or stabilized power supply
 Current consumption: < 90 mA
 Indication: Die numbers 1...6 via LEDs
 Clock frequency: approx. 30 Hz
 Board dimensions: approx. 55 x 55 mm



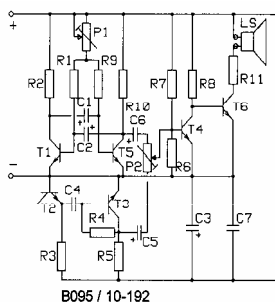
Price: 5.80 €
Fitting case: G100

B095 Marine diesel

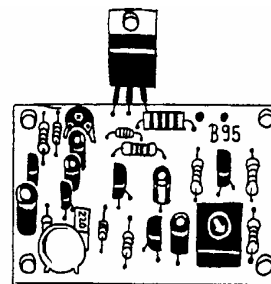
...produces a very real noise of a running marine diesel engine. The diesel sound and the running speed are adjustable. For 12 V, loudspeaker 4...8 Ohm.

Technical data:

Operating voltage: 12 V=
Loudspeaker connection: 4...8 Ohm
Noises: adjustable
Board dimensions: approx. 55 x 46 mm



B095 / 10-192



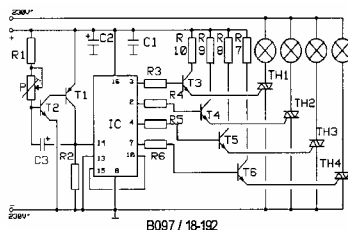
Price: 5.80 €
Fitting case: G027

B097 4-Channel running light 230 V~ + 12 V=

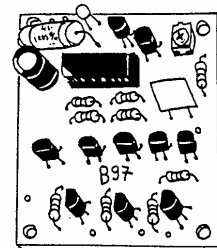
This digital 4-channel running light controls 4 different lamp outputs one after another and in regular intervals, lighting up the corresponding lamps one after another. For 230 V~ glow lamps, max. 100 W per output. The velocity is adjustable. The device works with fullwave control. UB: 12 V= and 230 V~.

Technical data:

Operating voltage: 230 V~ + 12 V=
Power per channel: max. 100 W bulb
Running speed: adjustable
Board dimensions: approx. 58 x 44 mm



B097 / 18-192



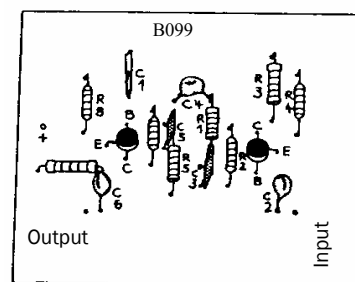
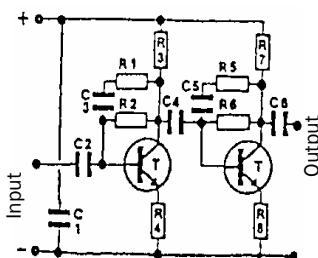
Price: 13.40 €
Fitting case: G027

B099 Special antenna amplifier 30...850 MHz

Wideband antenna amplifier, approx. 30...850 MHz. Operating voltage: 9...12 V=. Input and output impedance: 60 Ohm. Amplification max. 20 dB. No need of balancing. Especially suitable for amplification of weak television signals within VHF and UHF range as well as for amateurs receivers.

Technical data:

Operating voltage: 9...12 V=
Input and output impedance: 60...75 Ohm
Frequency range: approx. 30...850 MHz
Amplification: max. 20 dB
Board dimensions: approx. 55 x 55 mm



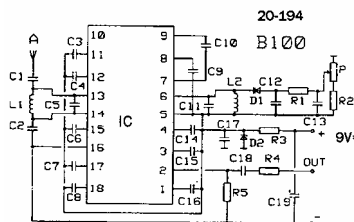
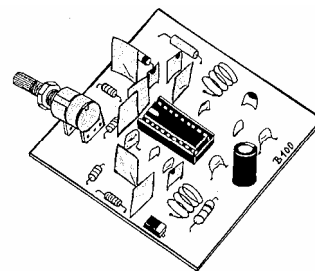
Price: 5.80 €

B100 FM-Receiver 9 V=

High-quality FM-receiver with special-IC. There are hardly tuning necessity (2 coils to be wound). Extraordinary sensitive + selective! Output: approx. 40 mV for a final amplifier or earphone.

Technical data:

Operating voltage: 9 V=
 Current capacity: < 10 mA
 Output voltage: > 40 mV
 Receiving range: FM
 Board dimensions: approx. 55 x 55 mm



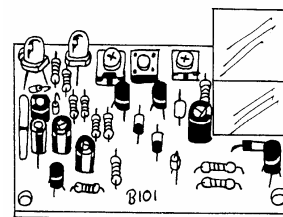
Price: 7.80 €
Fitting case: G082

B101 Universal alarm system for car, boat, house, garden, yard

Professional alarm unit for 12 Volt=. Connecting features: max. 20 rest contacts. Contact control and alarm indication via LED's. Adjustable rise-delay time and alarm duration: approx. 2...15 seconds and 8...30 seconds, in accordance with the police law.

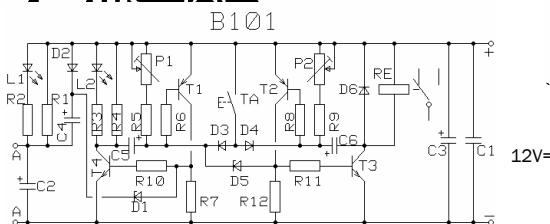
Technical data:

Operating voltage: 12 V=
 Rise-delay: adjustable
 Alarm delay: adjustable
 Alarm duration: approx. 8...30 sec.
 Relay contact: 1 x change over, 5 A
 Board dimensions: approx. 58 x 45 mm



Available accessories:

Alarm contacts: A002, A003 and A004 page 71



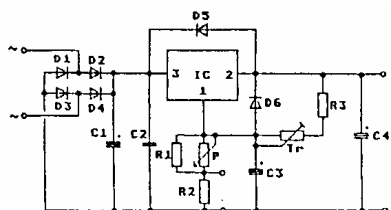
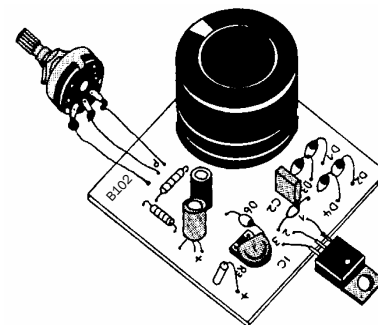
Price: 16.30 €
Fitting case: G028

B102 Power supply, approx. 1,2...30 V, max. 2 A

Stabilized, electronically controllable power supply with power-IC. There is also necessary a transformer 24 V / 2 A and 1 cooling element with min. dimensions: 10 x 10 x 5 cm.

Technical data:

Output voltage: approx. 1,2...30 V, adjustable
 Max. output current: approx. 2 A
 Board dimensions: approx. 55 x 55 mm



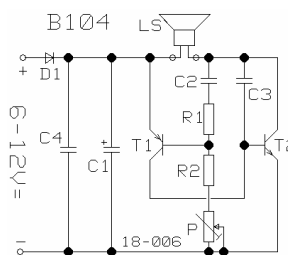
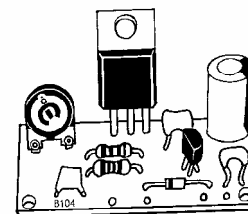
Price: 16.30 €

B104 Ship siren

...produces a loud, deep sound of a siren, similar to that of big vessels. Suitable for model ships, alarm systems, as doorbell or the like. For 6...12 V=, loudspeaker socket 8 Ohm > 2 W.

Technical data:

Operating voltage: 6...12 V=
 Current consumption: approx. 30 mA at 12 V= and 8 Ohm loudspeaker
 Loudspeaker socket: 8 Ohm / 5 W
 Sound: low frequency (adjustable)
 Board dimensions: approx. 45 x 18 mm



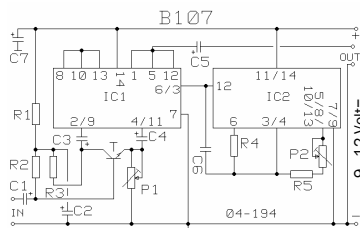
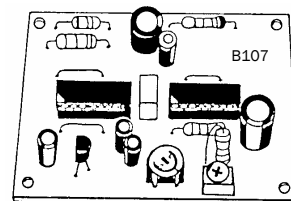
Price: 5.80 €
Fitting case: G024

B107 Robot-voice

...alterates the introduced speech so that it sounds like the voice of a robot. Adjustable effects. The device should be connected between the microphone and amplifier (or tape recorder).

Technical data:

Operating voltage: 9...12 V=
 Input: approx. 5 mV for microphone
 Output: > 50 mV for amplifier input
 Language alienation: adjustable
 Board dimensions: approx. 55 x 45 mm



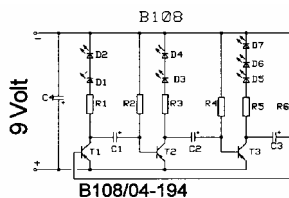
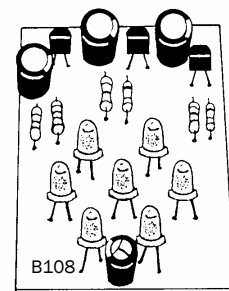
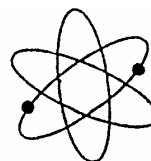
Price: 7.80 €
Fitting case: G027

B108 Atomium

Especially decorative device, 6 yellow LED's ("electrons") rotate one red LED ("atomic nucleus") optically. UB 9 V, ideal as adornment, identity disc, clothes-pin, etc.

Technical data:

Operating voltage: 9 V=
 Light indication: 7 LED's, each 5 mm
 Board dimensions: approx. 45 x 55 mm



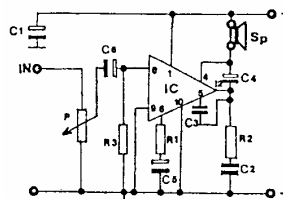
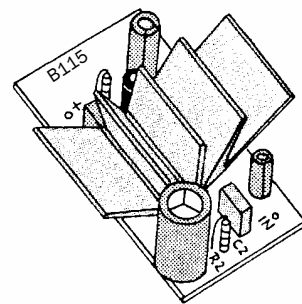
Price: 5.80 €
Fitting case: G021

B115 Amplifier 8 Watt

HiFi-amplifier with one IC. Operating voltage: 6...16 V= Sensitivity: approx. 160 mV, for loudspeakers 4...16 Ohm. Frequency range: 40...20.000 Hz.

Technical data:

Max. output power: 8 W
 Operating voltage: 6...16 V=
 Input sensitivity: approx. 160 mV
 Loudspeaker connection: 4...16 Ohm
 Frequency response: approx. 40...20.000 Hz
 Board dimensions: approx. 55 x 27 mm



Price: 5.80 €
Fitting case: G010

B119 Converter approx. 100...200 MHz

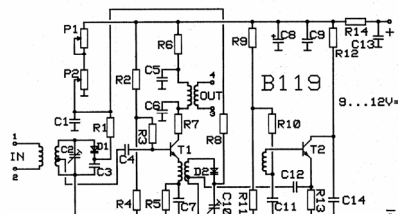
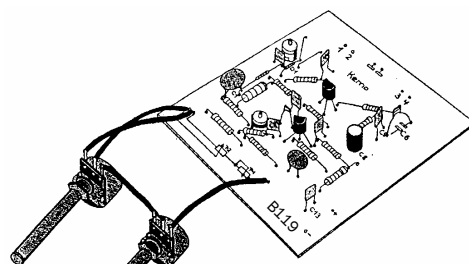
The converter makes it feasible to receive, for example, taxi radio, amateur radio, marine radio broadcasting, television sound, etc. through an ordinary FM-radio. The converter has simply to be placed within the antenna lead! It is necessary to observe the Postal Regulations!

Attention: Only radio amateurs who demonstrably have a licence are allowed to possess this kit! (CCT-Law within the EEC).

Please consider, at any circumstances, before starting operation the corresponding legal regulations (telecommunication law). It is not allowed to listen these frequencies out of the radio range. The operation of the converter is solely permitted to those amateurs holding the respective licence.

Technical data:

Operating voltage: 9...12 V=
 Sensitivity: up to 0,8 µV at 10 dB S/N
 Board dimensions: approx. 85 x 95 mm



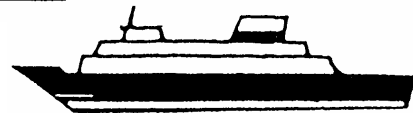
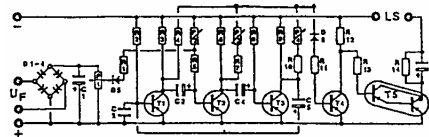
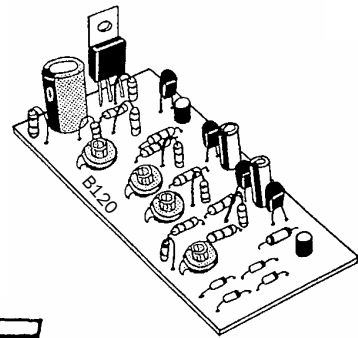
Price: 18.90 €

B120 Ship super diesel 6...12 V=

...produces exceptionally original the rumbling noise of a super diesel motor. It could be adjusted independently: exhaust system noise, rumbling of the valves, running velocity. The running velocity could also be adjusted in function of the electro traction motor. For loudspeaker 4...8 Ohm, 7...10 W!

Technical data:

Operating voltage: 6...12 V=
 Loudspeaker connection: 4...8 Ohm
 Power: max. 7...10 W
 Noises: adjustable
 Board dimensions: approx. 70 x 35 mm



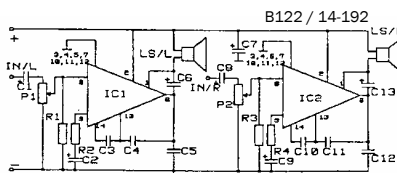
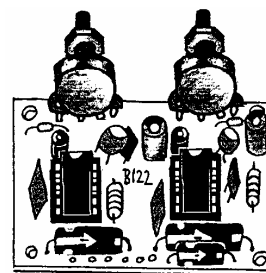
Price: 9.80 €
Fitting case: G010

B122 Stereo amplifier

2 x 2,5 W, 6...12 V=, for loudspeaker 8...16 Ohm.

Technical data:

Operating voltage: 6...12 V=
 Frequency response: approx. 20...20.000 Hz
 Input sensitivity: approx. 100 mV
 Loudspeaker connection: 8...16 Ohm
 Output power: max. 2,5 W per channel
 Board dimensions: approx. 54 x 44 mm



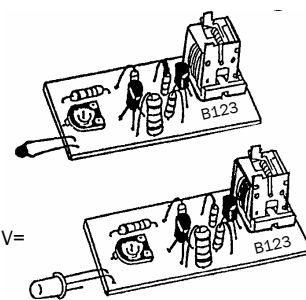
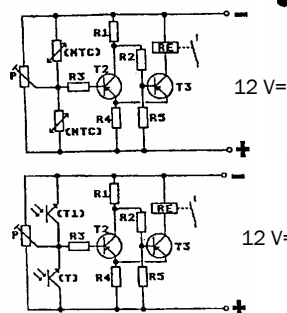
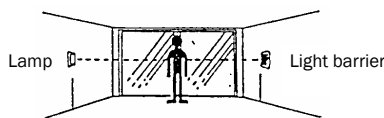
Price: 10.80 €
 Fitting case: G027

B123 Combination kit: Light barrier - heat switch - twilight switch 12 V=

With this "combination construction set" you may optionally construct a light barrier, a heat switch (-40° C ... +100° C), ice alarm or a twilight switch. Operating voltage: 12 V=. The relay has a max. load of 6 A.

Technical data:

Operating voltage: 12 V=
 Current capacity: max. approx. 120 mA
 Relay: 1 x ON, max. 6 A
 Switching threshold: adjustable
 Board dimensions: approx. 45 x 22 mm



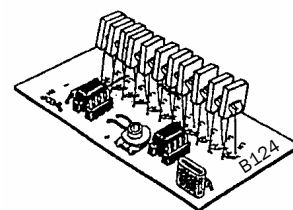
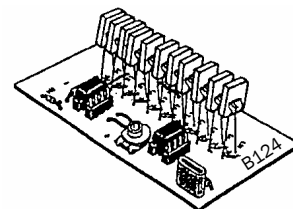
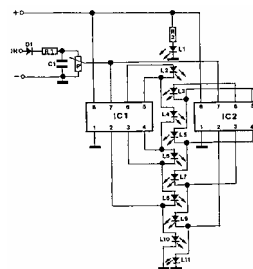
Price: 7.80 €
 Fitting case: G027

B124 Stereo LED-volume indicator 2 x 11 LED's

Almost inertialless volume indicator for amplifier units from 2...100 Watt. Indication is realised through 22 LED's (2 x 11 LED). Operating voltage: 12 V=. Easy connection with the loudspeakers.

Technical data:

Operating voltage: 12 V=
 Sensitivity: adjustable
 Display: 2 x 11 LED's
 Display type: light band
 Board dimensions: approx. 92 x 46 mm



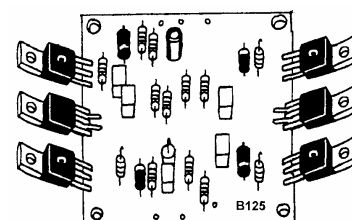
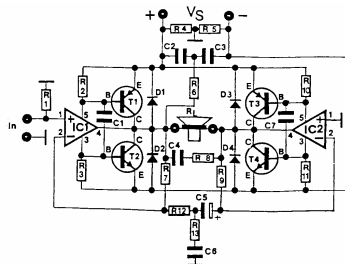
Price: 21.60 €

B125 200 W Amplifier

High-power amplifier of top-class quality for loudspeaker from 4...16 Ohm. Operating voltage: 24...36 V, max. 5 A. F: 20...20.000 Hz. Required cooling element: cooling fin with min. dimensions 20 x 10 x 4 cm or greater (thermal resistance < 1 k/W). The cooling element and insulation material is not enclosed.

Technical data:

Operating voltage: max. 44 V (max. 5 A)
 Loudspeaker: 4...16 Ohm
 Frequency response: 20...20.000 Hz
 Input sensitivity: approx. 500 mV
 Board dimensions: approx. 56 x 51 mm



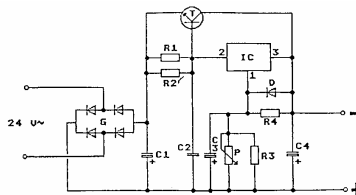
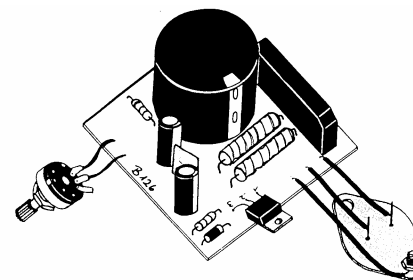
Price: 19.80 €

B126 Power supply, approx. 1,2...30 V, max. 5 A

Steplessly adjustable power supply with a power IC. Max. current consumption: 5 Ampere. There is also necessary a mains transformer 24 V 5 A and 2 cooling elements with min. dimensions: 15 x 10 x 7 cm and 5 x 10 x 3 cm (or similar).

Technical data:

Output voltage: adjustable approx. 1,2...30 V
 Output current: max. 5 A
 Input voltage: 24 V~ 5 A
 Board dimensions: approx. 55 x 55 mm



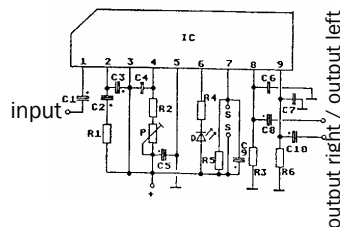
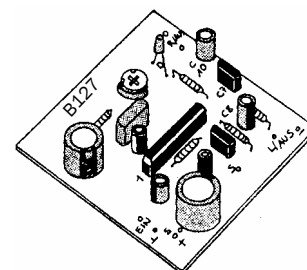
Price: 7.80 €

B127 Stereo decoder

The decoder has simply to be connected at the A.F. output (e.g. loudspeaker connection) of a FM-radio. It is then possible to connect at the output of the decoder a stereo amplifier. Disconnectable, automatic switch-over mono-stereo when receiving the stereo signal. Stereo indication through LED.

Technical data:

Operating voltage: 4,5...12 V=
 Change over mono / stereo: automatically
 Stereo indication: through LED
 Board dimensions: approx. 70 x 70 mm



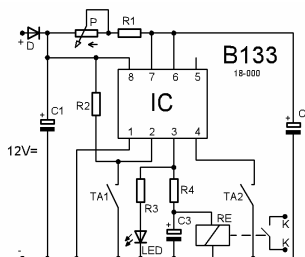
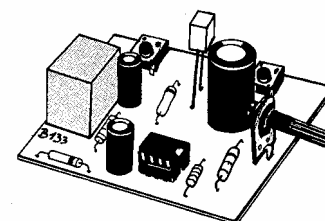
Price: 8.10 €
 Fitting case: G010

B133 Precision timer

Adjustable time switch for switching operations from approx. 1 sec. to approx. 40 minutes. The device switches on after pressing the key and switches off again when the adjusted time has expired. The lapse of time may be interrupted any time with the reset key. Operating voltage: 12 V=. Rupturing capacity: max. 25 V 3 A.

Technical data:

Adjustable time: approx. 1 sec. to 10 min. or approx. 3 sec. to 40 min.
 Adjustment of time: with an adjustable regulator
 Operating voltage: 12 V=
 Current consumption: < 50 mA
 Rupturing capacity: max. 25 V, max. 3 A
 Switching contact: 1 x ON
 Board dimensions: approx. 54 x 44 mm



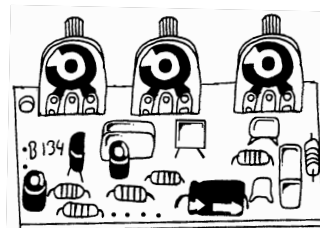
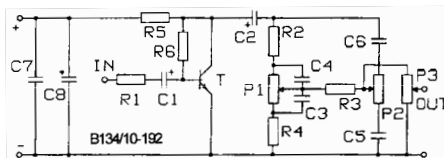
Price: 7.80 €
 Fitting case: G024

B134 Mono sound controller separate treble, bass and volume regulation

This mono sound controller must be superposed to the mono final amplifier. Trebles, basses and volume are adjustable separately.

Technical data:

Operating voltage: 9...18 V=
Current load: approx. 3 mA
Controlling: approx. ± 15 dB
Board dimensions: approx. 63 x 30 mm



Price: 10.80 €
Fitting case: G010

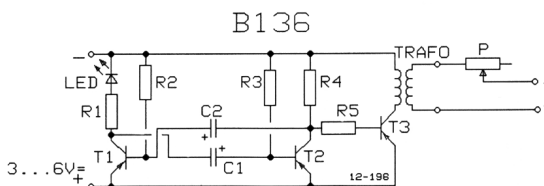
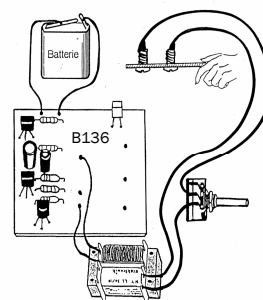
B136 Electronic acupuncture

The electronic acupuncture may bring relief to many diseases. This kit works according to the electronic acupuncture system. You will find enclosed an illustrated description for the treatment. Operating voltage: 3...6 V=.

Prof. Dr. Kazumi Masaki, University of Osaka, has found out that it is possible to replace the since millenium well-proven acupuncture needle by low-frequency undulated currents. 2 electrodes which have to be placed simply on the skin, substitute the often aching treatment with the needle. The electronic acupuncture is free of pain but effective, and may perhaps substitute medicine.

Technical data:

Operating voltage: 3...6 V=
Power consumption: < 100 mA
Output pulses: adjustable according to skin resistance in case of very low currents
Board dimensions: approx. 45 x 55 mm



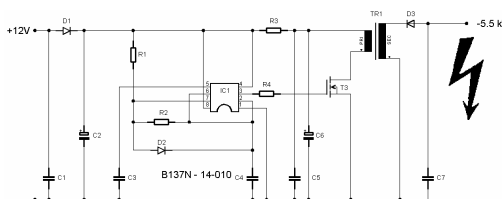
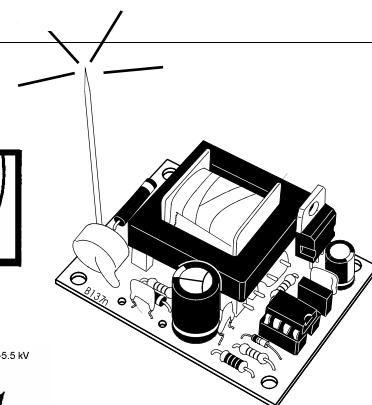
Price: 7.80 €

B137N Ion generator ---Indoors health resort climate---

Input: 12 V=, output: 5...7 kVs. This ion-generator regenerates negatively loaded air particles (air-ions). By this, an air-regenerating effect as well as the binding of dust and bacteria will be achieved. A high share of negative air-ions is necessary for the general well being: it reduces troubled sleep, aggressiveness, headache, sensitivity to changes in the weather, lack of concentration, etc.

Technical data:

Operating voltage: 12 V= (stabilised power supply)
Current consumption: approx. 30...50 mA
Output voltage: static, approx. 5000...7000 V peak value
Board dimensions: approx. 56 x 45 mm



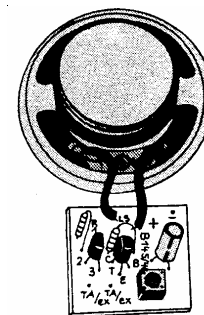
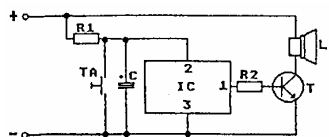
Price: 9.80 €
Fitting case: G027

B146 Electronic melody "Coo Coo Waltz"

...plays for a long time the famous Waltz melody in an expressive high-quality sound. The melody will start through a push-button and stop automatically. Loudspeaker included.

Technical data:

Operating voltage: 3 V=
Loudspeaker: 8 Ohm
Melody period: 64 notes
Board dimensions: approx. 25 x 28 mm



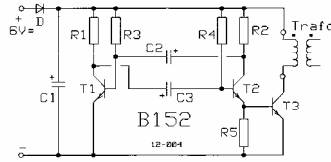
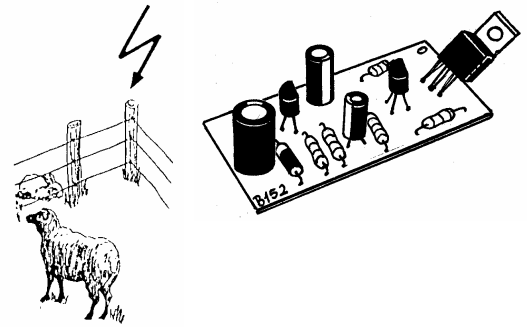
Price: 10.80 €
Fitting case: G02B

B152 Electronic fence appliance

...produces a pulsatory high-voltage of > 3000 Volt out of 6 Volt. For small animal-electric fences, as protection against burglars (set the door handles under voltage etc.). Furthermore a standard power transformer 230 V~ / 12 V 1 A is necessary.

Technical data:

Operating voltage: 6 V=
Average power consumption: approx. 100 mA on average, up to 1,5 A in pulse spikes
Board dimensions: approx. 45 x 21 mm



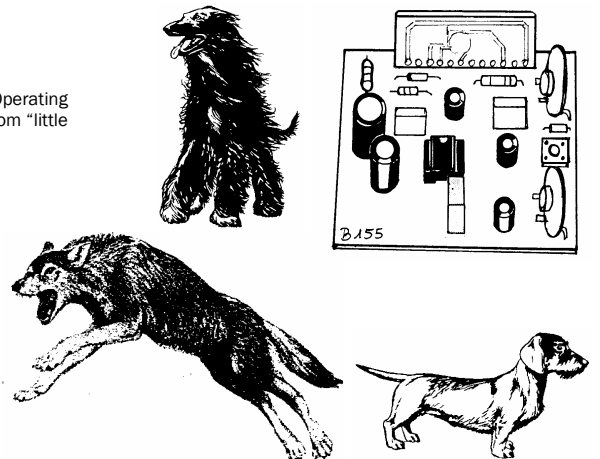
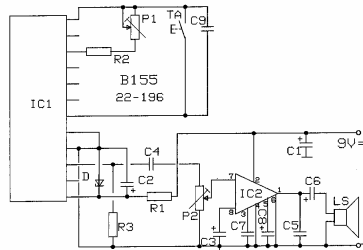
Price: 10.80 €
Fitting case: G024

B155 Electronic dog barking

Produces almost realistically and loudly the barking of a dog. For one loudspeaker 8 Ohm, > 1 W. Operating voltage 9 V=. The barking is stored on a special-voice-synthesizer-IC. The sound is adjustable, i.e. from "little yelper" to "big naughty dog".

Technical data:

Operating voltage: 9 V=
Loudspeaker: 8 Ohm (not included)
Board dimensions: approx. 55 x 55 mm



Price: 13.40 €
Fitting case: G082

B156 FM-Receiver

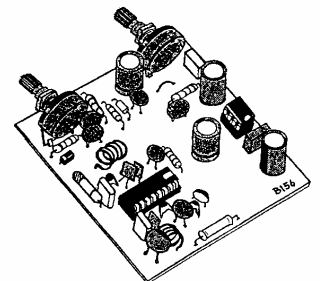
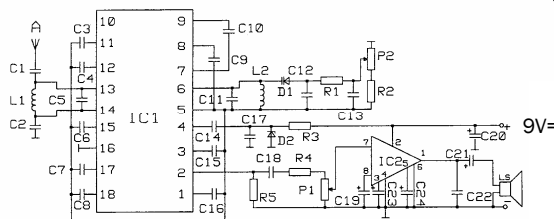
Also for police radio and aeronautical radio service approx. 108 - 132 MHz

High-quality receiver with the IC TDA 7000. Excellent reception properties + selectivity. Loudspeaker connection 8 Ohm (1 W). Very simple construction, almost no alignments are necessary. Operating voltage 9 Volt approx. 88 - 108 MHz.

Licensed radio amateurs may extend the frequency area of this FM-receiver up to approx. 132 MHz.

Technical data:

Operating voltage: 9 V=, approx. 88 - 108 MHz
LF-output power: approx. 1 W
Loudspeaker connection: 8 Ohm
Receiving range: FM
Board dimensions: approx. 60 x 70 mm



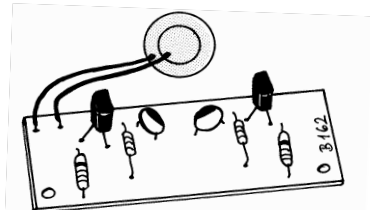
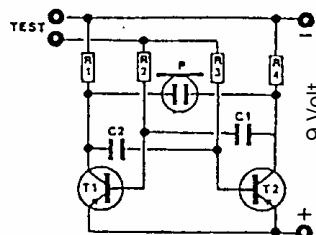
Price: 13.80 €
Fitting case: G081

B162 Continuity tester with piezo buzzer

For testing highly resistive and low impedance connections. An extremely low holding-wire current flows (< 10 µA). If the connection is conductive, the piezo buzzer hums. Also usable as rain indicator when the test probes contact water!

Technical data:

Operating voltage: 9 V=
Acoustical electrical transducer: piezo
Measuring current: < 10 µA
Board dimensions: approx. 19 x 55 mm



Price: 5.50 €
Fitting case: G01B

B172 The little electro-technician

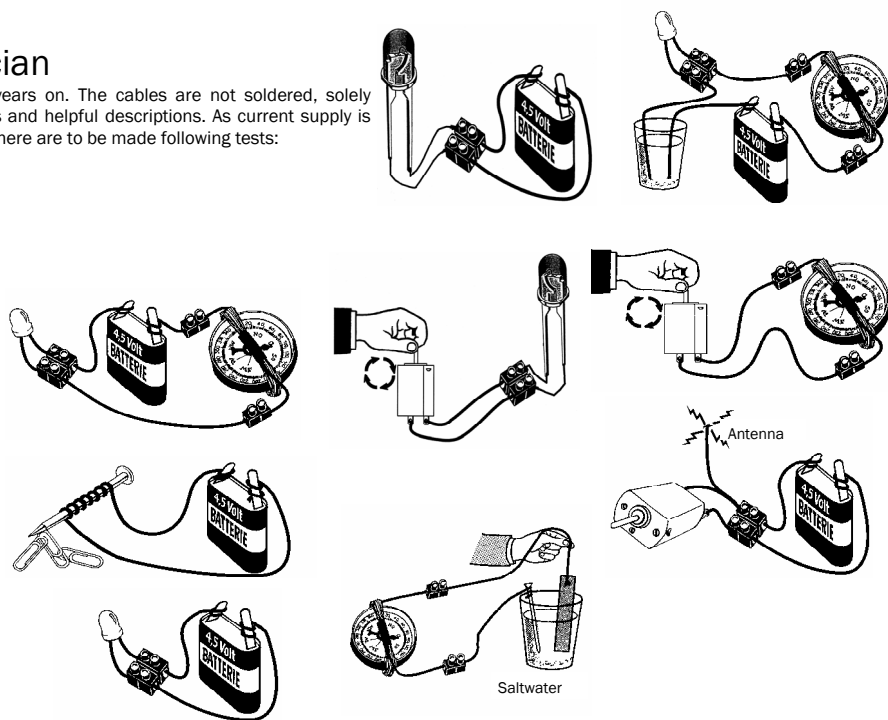
Easy instructional construction set for beginners from 8 years on. The cables are not soldered, solely screwed or twisted. The tests are described through figures and helpful descriptions. As current supply is been used a 4,5 V flat battery (not included). Among others there are to be made following tests:

- 1) ordinary circuit with small lamp
- 2) electromagnetism
- 3) current proof through compass needle
- 4) radio transmitter system Marconi
- 5) generator
- 6) selfmade battery etc.
- 7) test: of conductivity of water
- 8 + 9) LED tests

Technical data:

Operating voltage: 4,5 V battery (not included)
 Wiring: through screw-type terminals and loose twisting
 Mounting instructions: each with figure
 Age: for beginners from 8 years on

Price: 7.80 €



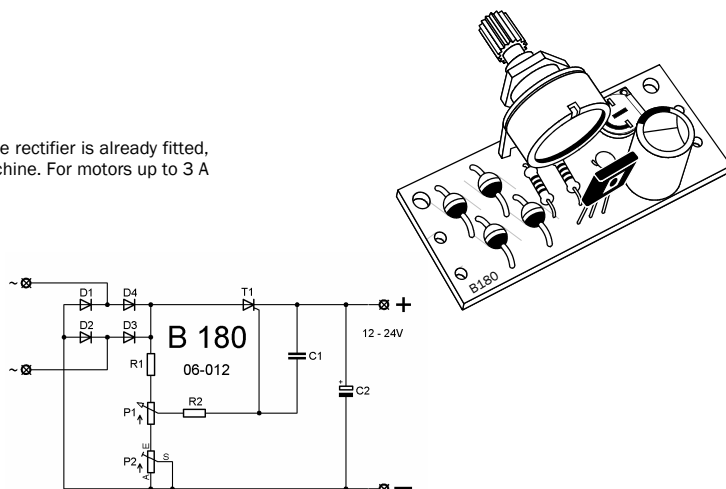
B180 Speed control for mini-drilling machines 12...24 V

...for operation of miniature drilling machines with DC-motor at a transformer. The rectifier is already fitted, you need only a transformer with AC-voltage, voltage according to the drilling machine. For motors up to 3 A current input, voltage 12...24 V.

Technical data:

Operating voltage (transformer voltage): 12...24 V alternating voltage (50...60 Hz)
 Max. loading capacity: 3 amperes
 Connectable loads: direct-current motors 12...24 V, max. 3 A power consumption
 Possible control: approx. 0...90 %
 Board dimensions: approx. 55 x 24 mm

Price: 5.80 €
Fitting case: G027



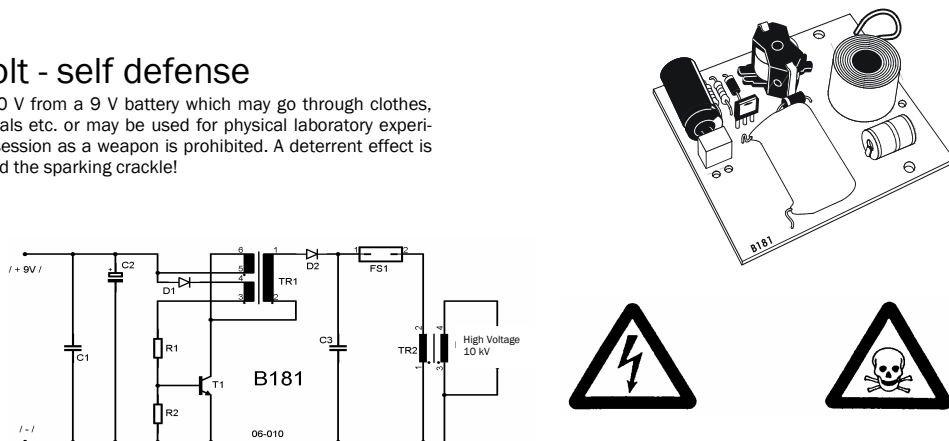
B181 Paralyser 10.000 Volt - self defense

...produces high-voltage sparks of more than 10.000 V from a 9 V battery which may go through clothes, too. Ideal as self-defence weapon against wild animals etc. or may be used for physical laboratory experiments. In several countries (e.g. in the EU) the possession as a weapon is prohibited. A deterrent effect is already achieved through the sparks flashing over and the sparking crackle!

Technical data:

Operating voltage: 9 V=
 Current consumption: approx. 160 mA
 Output voltage: max. 10.000 V
 Frequency of sparks: > 3 sparks per second
 Board dimensions: approx. 65 x 56 mm

Price: 17.80 €
Fitting case: G01B

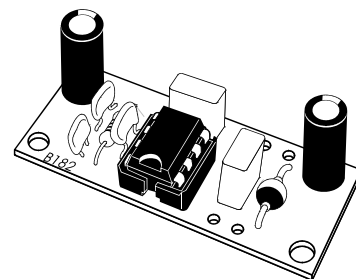
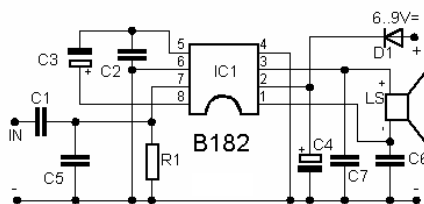


B182 Amplifier 1 Watt

Small universal amplifier with a peak sound capacity of 2 Watt. Operating voltage: 6...9 V=. Input sensitivity: approx. 80 mV, loudspeaker connection: 8 ohm. Frequency range: approx. 20...25000 Hz.

Technical data:

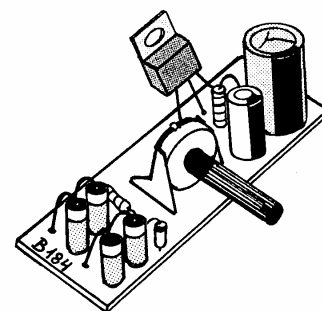
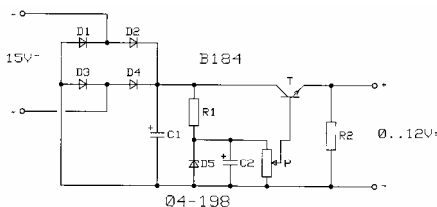
Power: max. 2 W music power
 Operating voltage: 6...9 V=
 Current consumption: max. 380 mA
 Frequency range: approx. 20...25000 Hz
 Sensitivity: approx. 80 mV
 Board dimensions: approx. 44,5 x 18 mm



Price: **3.80 €**
 Fitting case: G027

B184 Power supply 0...12 V=, max. 0,8 A

Easy, electronically adjustable experimental power supply. Output voltage adjustable approx. 0 up to 12 V=. Power maximum: 800 mA. For operation is required: 1 mains transformer 15 V~, > 0,8 A and one cooling element with the minimum dimensions: approx. 30 x 70 x 15 mm or greater. Board dimensions: approx. 22 x 63 mm



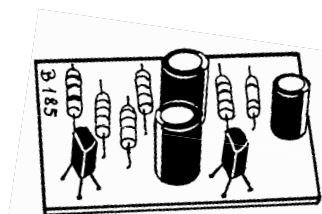
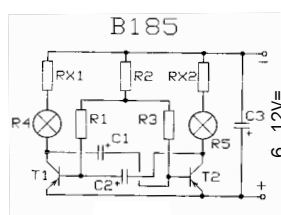
Price: **3.70 €**
 Fitting case: G010

B185 Flasher 6...12 V=, max. 100 mA

Electronic flasher unit for glow lamps 6...12 V=, max. 100 mA. Also suitable as alternating flasher. Flashing frequency: approx. 1...3 x per second. Ideal for usage within miniature constructing! Together with the additional kit B197 "relay card" (not included in this kit) it is feasible to operate flashers with loads up to 3 Ampere current consumption! Board dimensions: approx. 45 x 26 mm

Available accessory:

B197 Relay card 12 V=, page 24

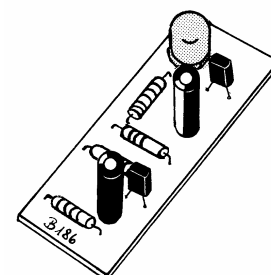
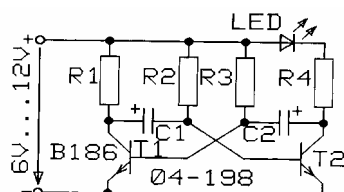


Price: **3.80 €**
 Fitting case: G027



B186 Jumbo LED flasher

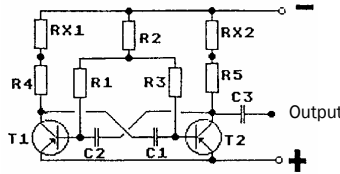
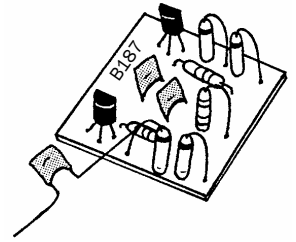
Electronic flasher unit with a great Ø 8 mm light emitting diode. Operating voltage: approx. 6...12 V=. Flashing frequency: approx. 60...120 x per minute. For decoration, models etc. Board dimensions: approx. 20 x 55 mm



Price: **3.80 €**
 Fitting case: G027

B187 Signal-Injector (test signal generator)

Universal square-wave sound generator with approx. 1000 Hz basic frequency and a great number of harmonic waves which lead up to FM-range. Operating voltage: 6...12 V. The signal can be listened through a highly ohmic earphone or could be amplified for loudspeakers through an amplifier. Ideal as repair equipment for radios and amplifiers, in order to feed a sound signal at various stages of the defect object. Board dimensions: approx. 25 x 24 mm

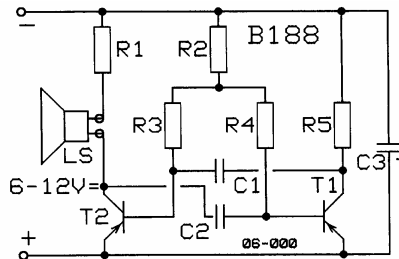
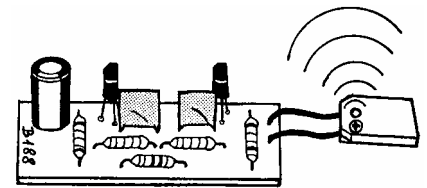


Price: 3.70 €
Fitting case: G01B

B188 Mini signal horn 6...12 V=

With a mini-loudspeaker (approx. 14 x 11 mm) this device emits a tone of approx. 3000 Hz. Ideal for fitting it into miniature models, as signal unit, morse sound generator, etc. Of course, it is possible to connect a greater loudspeaker. Operating voltage: 6...12 Volt=.

Board dimensions: approx. 44 x 16 mm

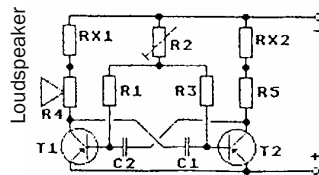
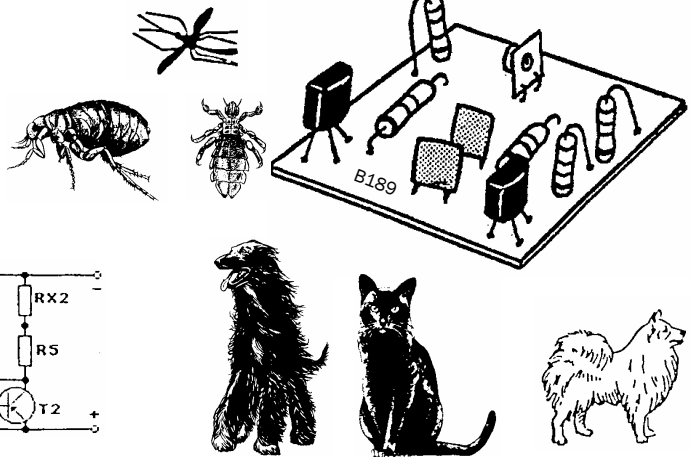


Price: 3.80 €
Fitting case: G027

B189 Anti-flea-generator for the cat- and dog-basket

This generator produces ultrasonic sounds, which are adjustable within the range of approx. 8...35 kHz. It is said, that crawling and jumping parasites are banished through the ultrasonic sound. Frequency can be adjusted so that the domestic animal will not be disturbed. Operating voltage: 9 V=. As loudspeaker is required either a small treble loudspeaker 8 Ohm (no piezo!) or a dynamic 8 Ohm earphone. (Not enclosed in the kit).

Board dimensions: approx. 25 x 24 mm

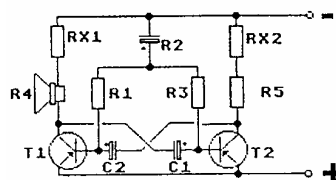
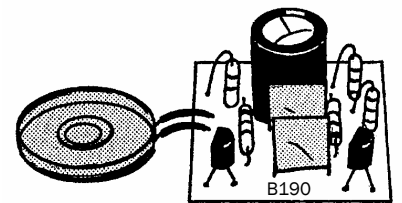


Price: 3.70 €
Fitting case: G01B

B190 Mini alarm system

It is feasible to connect as much alarm contacts as desired. The contacts (not enclosed in the kit) have to be fixed at doors, windows, drawers, etc. which are to be protected. Whenever the alarm will be released, there will sound for approx. 2 seconds a cheeping, shortly swelling up and down tone. The sound is relatively silent, but will attract attention and could be increased through an additional amplifier. A mini-loudspeaker Ø 30 mm is enclosed. Operating voltage: 9...12 V=. Ideal as alarm unit for drawers, cupboards and for children's rooms.

Board dimensions: ca. 25 x 24 mm

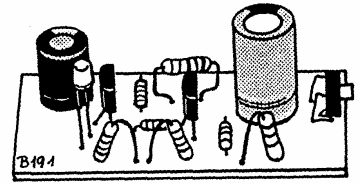


Available accessories:
Alarm contacts: A002, A003 and A004, page 71

Price: 3.70 €
Fitting case: G01B

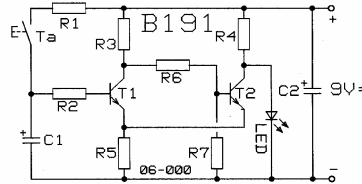
B191 Mini timer 9 Volt=

Whenever the enclosed pushbutton will be pushed, the light emitting diode will light up for approx. 100...180 seconds. Usage. As timer for games (e.g. for chess) or for easy photographic and developing works. It is possible to make time adjustable, if a potentiometer 50 k lin. is connected (not enclosed in the kit). We offer as accessories our kit B 197 "Relay Card", through which it is made feasible to switch greater loads up to 3 A with the Mini-Timer. Operating voltage: 9 V=. Board dimensions: approx. 56 x 16 mm



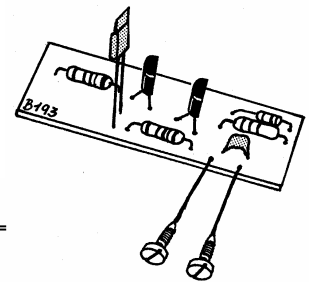
Available accessory: [B197 Relay card 12V=, page 24](#)

Price: **3.80 €**
Fitting case: G027



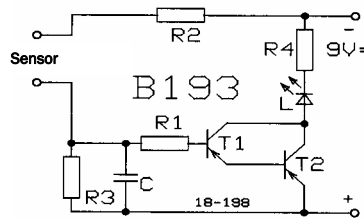
B193 Sensor switch 9 V=

Whenever the two screw heads will be touched with the fingers, this device will light up a light emitting diode. Operating voltage 9 V=. As accessories is available our kit "B197 relay card". If the relay card will be connected with the sensor switch, it is feasible to switch through the relay contact loads up to 3 A. Board dimensions: approx. 45 x 15 mm



Available accessory: [B197 Relay card 12V=, page 24](#)

Price: **3.70 €**
Fitting case: G027

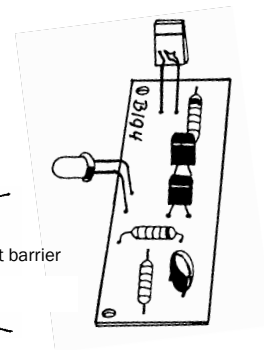
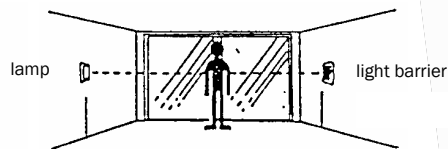
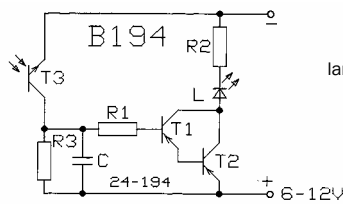


B194 Light barrier

Whenever there is incidence of light onto the phototransistor, the light barrier will switch on a light emitting diode. As soon as the light beam will be interrupted, the LED will switch off. Operating voltage: 6...12 V=. As accessories is available kit "B197 Relay card". It is possible to connect it with the light barrier and to switch with the relay contact other loads up to 3 A. Board dimensions: approx. 45 x 15 mm

Available accessory:
[B197 Relay card 12 V=, page 24](#)

Price: **3.70 €**
Fitting case: G027

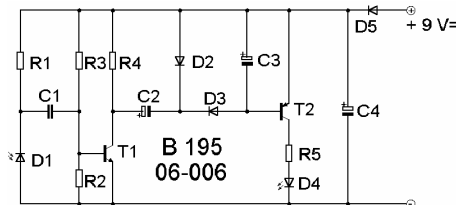
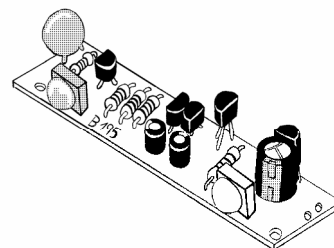


B195 Infrared detector

With the aid of this circuitry it is made possible to carry out functional tests of infrared remote controls used in TV-sets and video devices, etc. Whenever there is radiation of infrared beams on the Special-Sensor, the LED will light up and indicate that the infrared remote control is operated. Operating voltage: 9 V=. As accessories is available our kit "B 197 Relay Card". This could be connected with the Infrared Detector and it is then possible to switch through the relay contact loads up to 3 A.

Technical data:

Operating voltage: 9 V= (8...12 V)
 Current consumption without signal: < 200 μ A
 Current consumption with signal from a remote control: approx. 2...15 mA
 Range between remote control and infrared detector: approx. 2...10 cm, depending on the remote control
 Function display: via a light-emitting diode
 Board dimensions: approx. 17 x 59 mm



Available accessory: B197 Relay card 12 V=, page 24

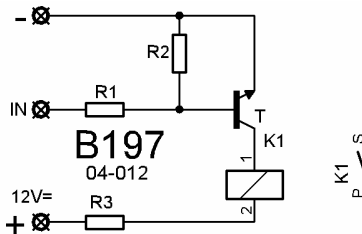
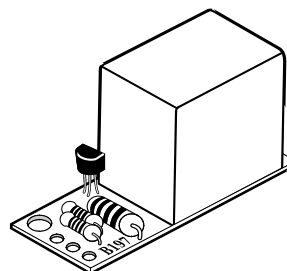
Price: **3.80 €**
 Fitting case: G027

B197 Relay card 12 V=

This relay card could be released with weak signals from approx. 5 mA upwards and will then switch a relay with a heavy current contact of 3 Ampere. Contact 1 x ON. Ideal as switching amplifier for other kits, which have solely a light emitting diode as output and should switch other devices and machines through the relay contact.

Technical data:

Operating voltage: 12 V=
 Current consumption: < 80 mA
 Contact capacity: 3 A / 30 V
 Sensitivity: < 5 mA
 Board dimensions: approx. 44 x 18 mm



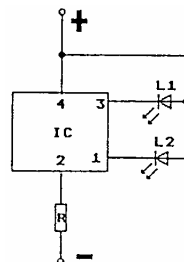
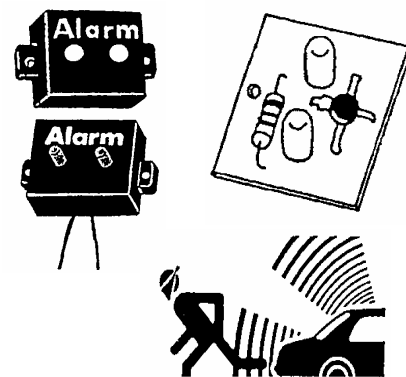
Price: **3.80 €**
 Fitting case: G027

B198 Alarm display

In this alarm display have been fitted 2 different coloured light emitting diodes, which flash alternatively in short sequences. For use in cars, weekend-houses, etc. in order to simulate an armed alarm set.

Technical data:

Operating voltage: 9...12 V=
 Board dimensions: approx. 22 x 27 mm



Price: **3.70 €**

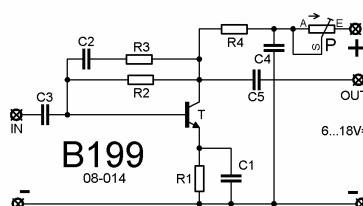
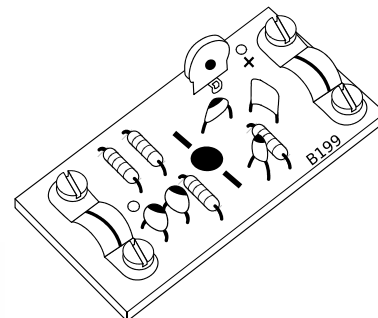
B199 Antenna amplifier approx. 50...1.000 MHz

Single-stage antenna amplifier, with continuously adjustable amplification up to max. 15 dB. For any television range from channel 2 up to channel 65, extraordinary suitable for FM radio and cable television. Input and output impedance: 50...75 Ohm. There are prepared clamps for coaxial cable on the board. As required it is possible to connect two antenna amplifiers one after another. The total amplification will correspondingly increase.

The antenna amplifier (with battery) has to be installed into an earthed metal casing.

Technical data:

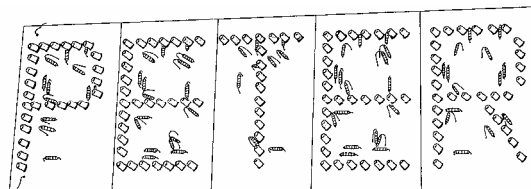
Operating voltage: 6...18 V=
 In- and output impedance: 50...75 Ω
 Amplification: 0...15 dB, adjustable
 Frequency range: approx. 50...1000 MHz (TV-channel 2...65)
 Board dimensions: approx. 26 x 50 mm



Price: **7.80 €**

B200 Luminous letters

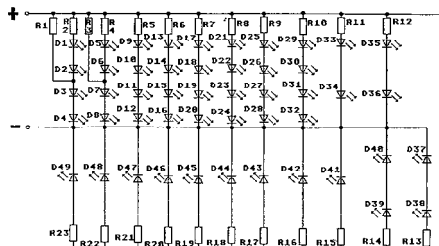
With this kit it is made possible to mount any capital letter of the alphabet or any digit from 0...9. The concrete description of each letter and of each digit is been enclosed. The kit includes especially bright LED's. The printed wiring board could be equipped also with LED's of any other colour. Operating voltage: 12 V. Current consumption: approx. 100...300 mA, depending on the digit. Dimensions: approx. 90 x 65 mm. With each kit it is feasible to mount any digit and putting several kits together, you are capable to build luminous nameplates, signboards, house numbers etc. Board dimensions: approx. 92 x 67 mm



Example for letters put together!

Fitting letter control see B206, page 26

Price: **8.10 €**

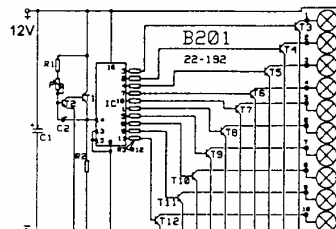
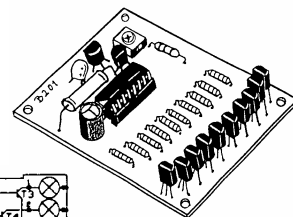


B201 Running light 10 channels 12 V= for small incandescent bulbs 12 V= max. 100 mA

Adjustable running speed. You may connect small incandescent bulbs or light emitting diodes (individually or in groups) up to a total output of 100 mA per channel.

Use: Decorative illumination of paintings, toys, model systems (e.g. model airports for the landing area lighting), etc.

Board dimensions: approx. 55 x 45 mm



Price: **13.40 €**
Fitting case: G027

B202 LED running light -10 channels-

Electronic running light with 10 light emitting diodes. Operating voltage: 9...12 V=, adjustable running velocity. For usage in decorations, warning advices etc.

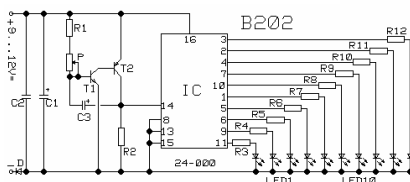
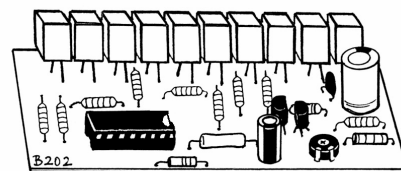
Technical data:

Operating voltage: 9...12 V=

Current consumption: approx. 20 mA

Running speed: adjustable: approx. 1.5...4 sec. per passage

Board dimensions: approx. 106 x 34 mm



Price: **10.80 €**
Fitting case: G089

B203 Power supply approx. 1,2...18 V=, max. 10 A

Electronical adjustable high-power supply. Adjustable from approx. 1,2 V to 18 V. Max. output current: approx. 10 Ampere. This power supply works with 5 parallel connected adjustable voltage regulators type LM 317. 4 diodes 25 A are enclosed usable as rectifier.

The following is still required: 1 mains transformer 18 V 10 A, 1 cooling element approx. 15 x 10 x 2 cm, 2 cooling elements each approx. 5 x 5 x 2 cm or more.

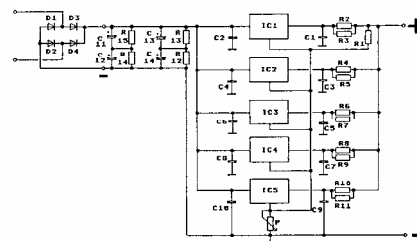
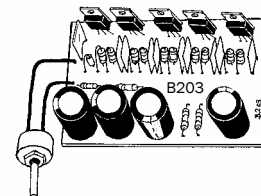
Technical data:

Output voltage: approx. 1,2...18 V=, adjustable

Max. output current: approx. 10 A

Input voltage: 18 V, 10 A transformer

Board dimensions: approx. 85 x 45 mm



Price: **21.60 €**

B204 Flash-LED 230 V~

Flash circuit with one red light emitting diode Ø 5 mm which can be operated directly at 230 V~. Flash frequency: 2 Hz.

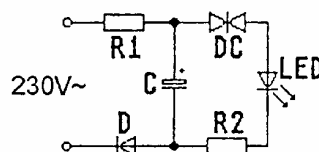
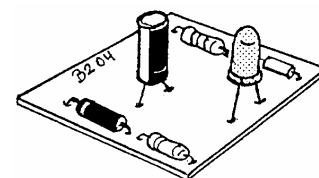
Usage: Control-lamp for devices and alarm systems, start control for machines etc.

Technical data:

Operating voltage: approx. 220...240 V~

Flash frequency: approx. 2 Hz

Board dimensions: approx. 25 x 23 mm



Price: 3.70 €
Fitting case: G027

B206 Luminous letter control

...switches luminous letters or lamp groups slowly one after another on, keeps all letters switched on for a while and switches off all letters at the same moment. Then, the process starts again. There are 4 connecting outputs at which in each case either 1 letter or one letter group could be connected (with a lot of letters or with a whole text). Operating voltage: 12...15 V=. Connecting outputs: 4, each max. 5 Ampere chargeable. The connecting velocity is adjustable. The control is especially suitable to be used with our LED-luminous letters Nr. B200.

Technical data:

Operating voltage: 12...15 V=

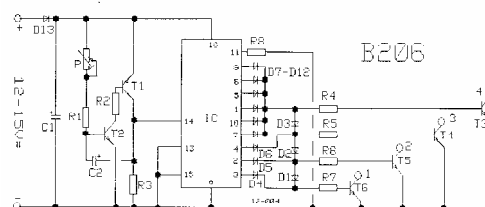
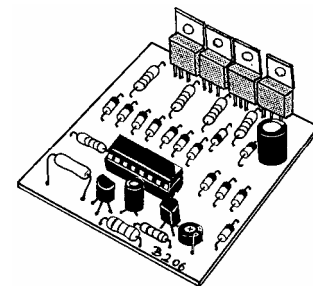
Switching outputs: 4

Loading capacity: max. 5 A per switching output

Clock frequency adjustable: approx. 0.5...1 Hz

After the 4th turn-on clock, all outputs still remain switched on for 6 clocks

Board dimensions: approx. 55 x 55 mm



The control is especially suitable to be used with our LED-luminous letters Nr. B200, page 25

Price: 10.80 €
Fitting case: G085

B207 Steamer noise with steam whistle + steam bell

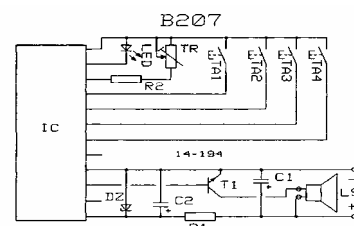
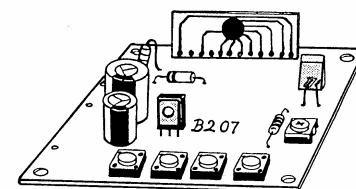
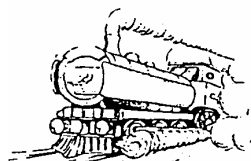
...produces very life-like the wheezing and hissing of a steamer. Furthermore a steam whistle and steam bell may resound. The noises can be released individually by means of a switch. The sound and speed of the noises are adjustable. Operating voltage: 4,5...6 V=. Loudspeaker connection: 8 Ohm, 1 Watt. Besides the single noises, it is also possible to play a program including all noises of a train arriving at the station: The train approaches, becomes louder, whistles and tinkles, enters the station vociferously, slows down and stops with a loud hissing.

Technical data:

Operating voltage: 4,5...6 V=

Loudspeaker connection: 8 Ohm 1 Watt

Board dimensions: approx. 55 x 44 mm

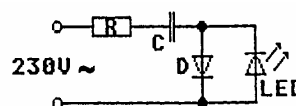
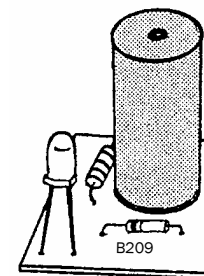


Price: 9.80 €
Fitting case: G027

B209 LED series printed circuit board 230 V~

LED signal lamp which can be directly operated at 230 V~. Use: signal lamp, operation indication for 230 V~ devices etc.

Board dimensions: approx. 29 x 20 mm



Price: 2.10 €
Fitting case: G027

B210 8-Channel-relay board

...for switching different appliances, lamps or motors by means of a computer program. The relay points can be loaded up to 3 A each at maximum. Operating voltage of the relay board: 12 V=. By means of the enclosed software it is possible to switch on and off up to 8 different appliances at different times. It is also possible to programme certain switching sequences (also for several days) or attractive effect lighting for stages and discotheques! The module has to be connected at the printer port of a standard PC. Software-CD is enclosed!

Technical data:

Operating voltage: 12 V= max. 0.8 A

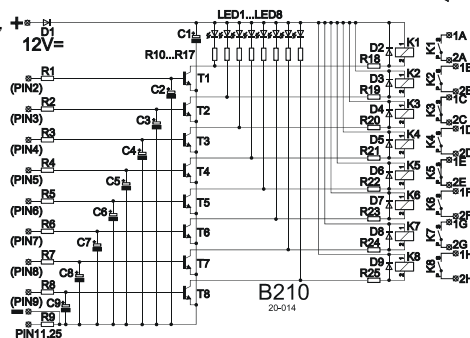
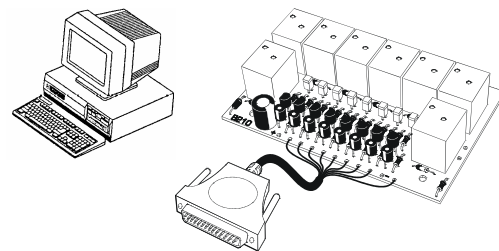
Channels: 8

Relay contact: 1 x ON max. 3 A max. 25 V each (If higher voltages shall be switched, please follow the instructions in the enclosed printed matter no. M1003)

Indication: each channel by 1 LED

Delivered software: DOS + WIN

Board dimensions: approx. 108 x 71 mm



Price: 19.80 €
Fitting case: G010

B211 Stepper motor control

A 6-branch stepper motor can be operated at this kit. The kit works without computer. For motors 6...12 V=, max. branch current 1.5 A. Adjustable impulse sequence approx. 15...240 per second. In order to switch over the sense of rotation of the motor, a switch 2 x change over is required (not included in the kit). The operating voltage depends on the motor which is used respectively (6...12 V=).

Technical data:

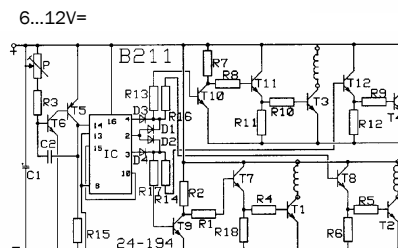
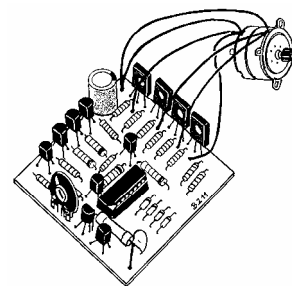
Operating voltage: 6...12 V=

Max. phase current: 1.5 A

For stepper motors: 6-phases

Impulse sequence: adjustable from approx. 15...240 Hz

Board dimensions: approx. 55 x 55 mm



Available stepper motor:

[P5339 Mini-stepper motor "42 SPM-24 DJA" page 51](#)

Price: 11.80 €

B212 Descaler against calcification and corrosion in water pipes!

This device is not harmful to the environment, i. e. without chemicals and operates on a physical-inductive base. Easy to mount, no intervention into conduits! This module protects washing machines, dish washers, heating boilers etc. Operation with a plug power supply 9...12 V=. Current load: < 20 mA.

Technical data:

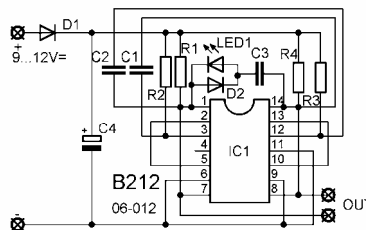
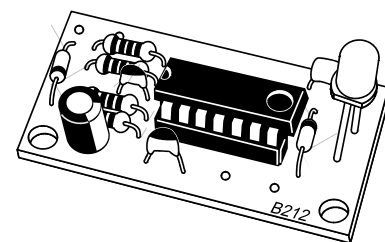
Operating voltage: 9...12 V DC voltage

Current consumption: < 20 mA

Equipment-on indicator: LED

Output: capacitive tension field

Board dimensions: approx. 45 x 22.5 mm



Price: 5.50 €
Fitting case: G027

B213 Infrared light barrier max. 50 m

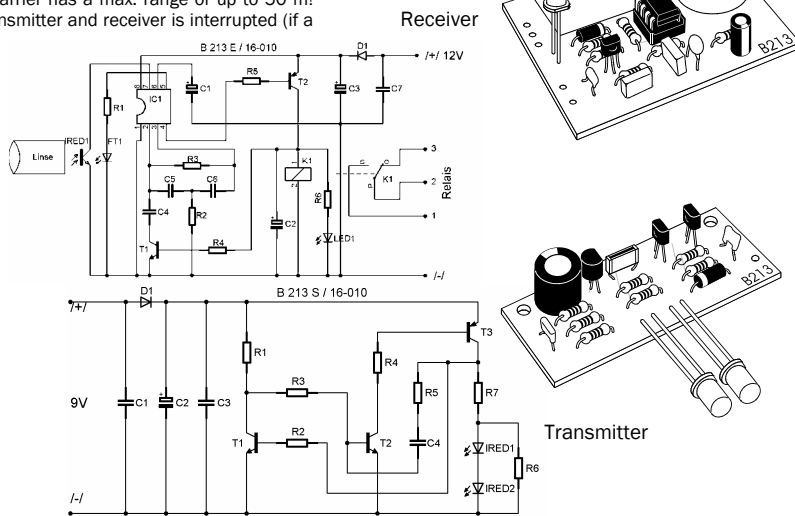
With the enclosed optics and highly sensitive photodetector this light barrier has a max. range of up to 50 m! The infrared light ray is invisible for men. If the light ray between the transmitter and receiver is interrupted (if a person walks through it) the relay in the receiver switches.

Technical data:

Operating voltage transmitter: 9 V=
 Current consumption transmitter: approx. 100 mA
 Operating voltage receiver: 12 V=
 Current consumption: max. approx. 50 mA
 Range: maximal approx. 50 m
 Relay contact receiver: 1 x switch-over, max. 25 V 3 A
 Board dimensions transmitter: approx. 58 x 23 mm
 Board dimensions receiver: approx. 57 x 45 mm

Recommended tilted mirror
if the infrared ray shall be deviated.
 K002 Reflector mirror, see page 70

Price: 23.80 €
Fitting case: 2 x G027



B214 Ultrasonic proximity sensor

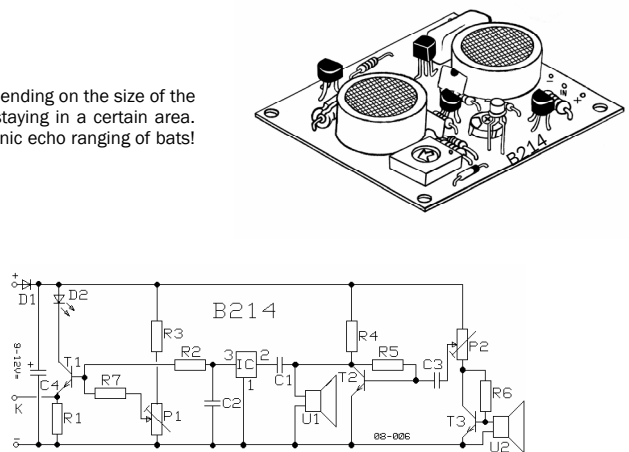
An LED lights up if a body approaches the ultrasonic sensors at a distance of 10...80 cm (depending on the size of the body). Use: parking-in assistance for cars in garages, alarm signal for persons or animals staying in a certain area. Operating voltage: 9...12 V=. The device works according to the same principle as the ultrasonic echo ranging of bats! This kit may be extended to relay operation with our relay board "B197" (not enclosed).

Technical data:

Operating voltage: 9...12 V=
 Operating frequency: approx. 40 kHz
 Range: approx. 10...80 cm, depending on the size of the body (approx. 0.01...0.5 m²)
 Display: via a light-emitting diode
 Current consumption: < 10 mA
 Board dimensions: approx. 55 x 45 mm

Available accessory: B197 Relay card 12 V=, page 24

Price: 9.80 €
Fitting case: G023



B215 Mini-infrared light barrier 10 cm

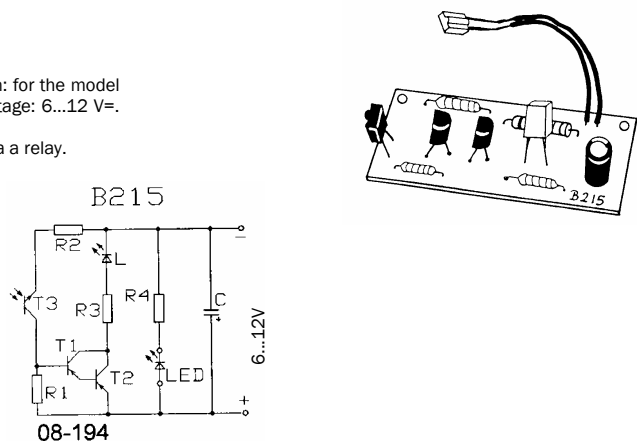
Infrared-light barrier with transmitter and receiver and a range of approx. 10 cm. Application: for the model railway, entry holes for aviaries, beehives etc. With invisible infrared light ray. Operating voltage: 6...12 V=. The light-emitting diode extinguishes if the light barrier is interrupted. As accessories the kit "B197 Relay card" is available in case other loads shall be switched via a relay. Board dimensions: approx. 44 x 15 mm

Available accessories:

B197 Relay card 12 V=, page 24

Recommended tilted mirror
if the infrared ray shall be deviated.
 K002 Reflector mirror, page 70

Price: 3.00 €
Fitting case: G027

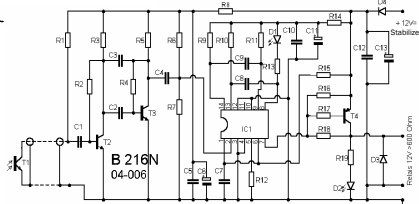
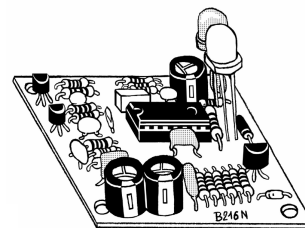
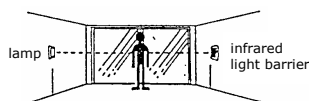


B216N Infrared light barrier 5 m

With invisible infrared light ray and a range of max. 5m. If the light ray is interrupted (if a person walks through the light ray), this will be indicated by a flashing LED. Operating voltage: 12 V=. If other instruments shall be switched with the light ray (e.g. a siren), a relay (12 V > 600 Ohm) or the Kemo relay card B197 can be connected in addition (both not contained in this kit).

Technical data:

- Operating voltage: 12 V= stabilized
- Current consumption: < 100 mA
- Range: > 5 m (with supplementary lens > 10 m, not enclosed)
- Transmitting frequency: approx. 3,7 kHz
- Board dimensions: approx. 58 x 45 mm



Available accessory: B197 Relay card 12 V=, page 24

Price: 8.20 €
Fitting case: G024

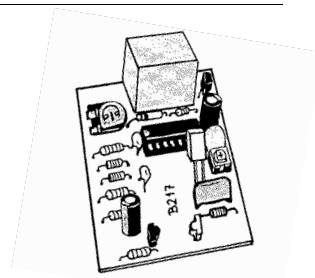
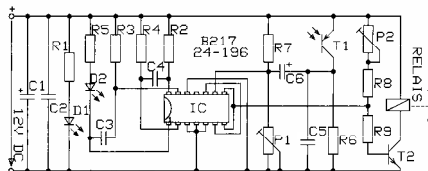
Recommended tilted mirror if the infrared ray shall be deviated. K002 Reflector Mirror, see page 70

B217 Smoke alarm 12 V=

This visual smoke alarm switches a relay if thick smoke gets between the installed infrared light barrier. Sirens, alarm lamps etc. may then be switched by means of the relay. Operating voltage: 12 V=, max. 150 mA.

Technical data:

- Operating voltage: 12 V=
- Operating system: optical smoke recognition
- Indication: via light-emitting diode
- Relay contact: 12 V, 1 X ON
- Board dimensions: approx. 59 x 45 mm



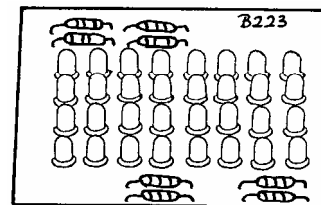
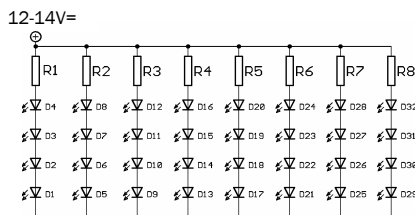
Price: 10.80 €
Fitting case: G024

B223 Infrared spotlight

With the infrared spotlight CCD- and video cameras may recognize objects also in complete darkness. The infrared light is invisible for men, CCD-cameras can see well with an infrared spotlight. Perfect for inconspicuous observation of entrances, drives etc. Operating voltage: 12...14 V= approx. 300 mA. Range: approx. 5 m.

Technical data:

- Operating voltage: 12...14 V=
- Current consumption: approx. 300 mA
- Light frequency: approx. 870...950 nm
- Board dimensions: approx. 74 x 57 mm



Price: 7.80 €
Fitting case: G089

B224 Laser show 6 V=

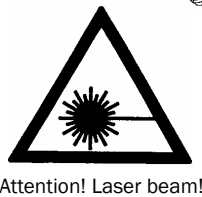
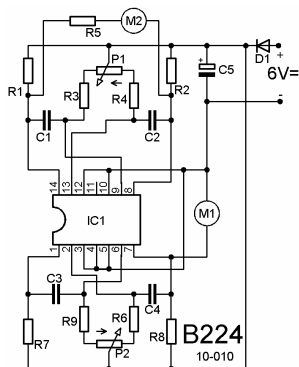
With this laser show many different figures can be projected to the wall by means of a laser. With 2 controllers you may regulate 2 reflecting motors via the installed electronics so that a lot of different figures can be shown. The necessary laser is not enclosed. The following are suitable as laser: laser pointer or laser modules which produce a laser point (without installed dispersing lens). Operating voltage for the laser show: 6 V=, max. 0,3 A.

Technical data:

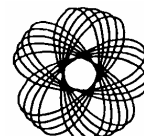
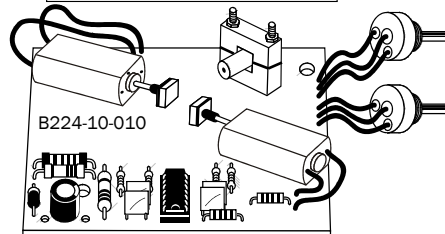
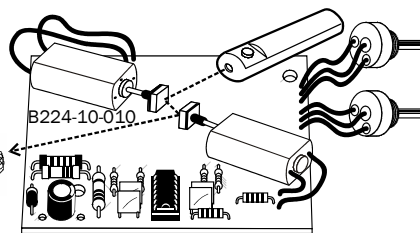
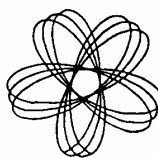
Operating voltage: 6 V=
 Current consumption: approx. 150 mA
 Reflecting motors: 2
 Board dimensions, gold-plated:
 approx. 100 x 75 mm

Fitting laser Modul: L005

Price: 9.80 €
Fitting case: G010



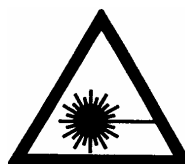
Attention! Laser beam!



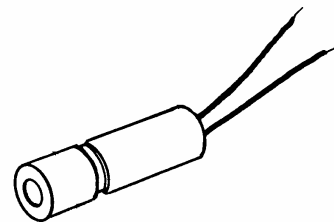
L005 Laser module for B224, B240 + M133

Operating voltage max. 3 V=. Output < 3,5 mW. Wavelength: approx. 650 nm (visible red laser light), laser class 3 A, length of the connecting line approx. 100 mm red (+) / white (-). Dimensions: Ø 8 mm, length 26 mm. Observe the laser regulations!
Do not look directly into the beam - risk of retinal burns!!!

Price: 29.80 €



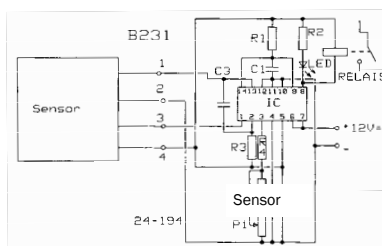
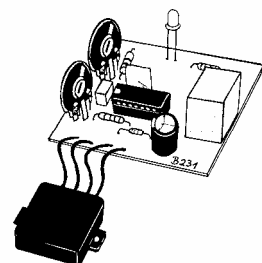
Attention! Laser beam!



B231 Electronic key

When holding the enclosed key pendant in front of the sensor (distance 5...15 mm), a relay switches on. Application: non-contact door opener to switch appliances etc. You may hide the sensor behind a nameplate or a door glass pane. In this case only "insiders" know, at which point you have to hold the key pendant in order to open the door. Operating voltage: 12 V= approx. 0,1 A. The key pendant does not require any battery! You may buy the substitute key pendant under order no. M131N.
 Board dimensions: approx. 55 x 46 mm

Price: 27.50 €
Fitting case: G024



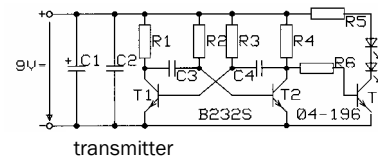
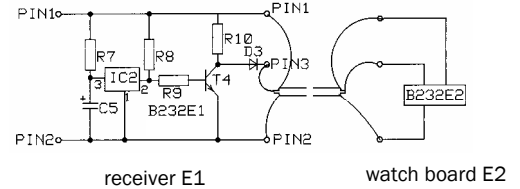
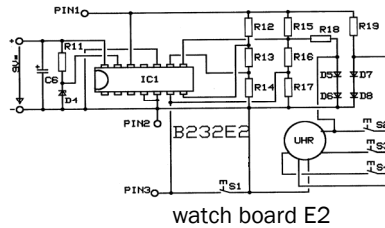
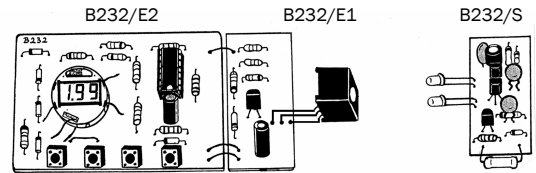
You may buy the substitute key pendant under No. M131N page 55

B232 Infrared stopwatch

Infrared light barrier with stopwatch. For timekeeping at sporting events, etc. The following modes of operation are possible: Start by pushing the button and stop with the infrared light barrier. Start with the infrared light barrier and stop by pushing the button. Start with infrared, switch over the watch and stop with the same light barrier (for circuit). When buying the additional light barrier B232Z, it is also possible to start and stop with 2 light barriers (on a straight distance at the starting and finishing line). Watch: quartz watch with LCD display. Precision: < 30 minutes 1/100 sec., > 30 min. 1 sec.. For battery operation 2 x 9 V=, range max. 8 m.

Technical data:

Operating voltage + current: transmitter: 9 V=, < 100mA, receiver with watch: 9 V= < 50 mA
 Range of the light barrier: approx. 8 m
 Display: < 30 min. resolution up to 1/100 sec., > 30 min. resolution 1 sec.
 Dimensions:
 Receiver board E1: approx. 54 x 25 mm
 Watch board E2: approx. 79 x 54 mm
 Transmitter board: approx. 54 x 28 mm



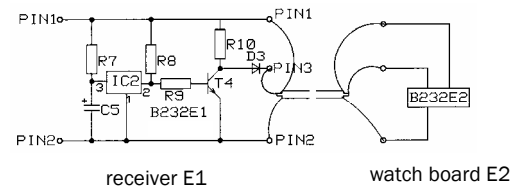
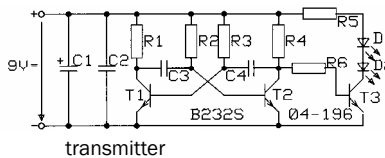
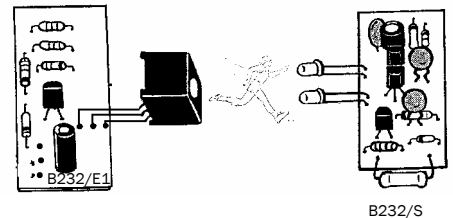
Price: 25.80 €
Fitting cases: G081 + G091

B232Z Additional light barrier for infrared stopwatch

Additional light barrier to the kit "Infrared Stopwatch B232". By means of this extension it is possible to operate the infrared stopwatch B232 with 2 light barriers: 1 barrier each at the start and finish. Operating voltage: 9 V=.

Technical data:

Operating voltage + current: transmitter: 9 V= < 100 mA
 Receiver: 9 V= < 20 mA
 Range of the light barrier: approx. 8 m
 Board dimension:
 Receiver: approx. 54 x 25 mm
 Transmitter: approx. 54 x 28 mm



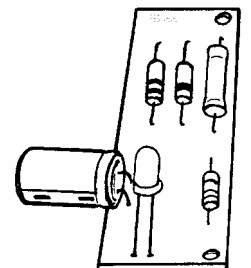
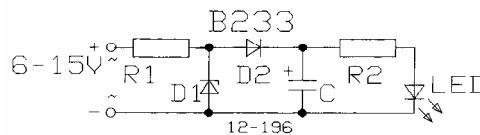
Price: 13.80 €
Fitting cases: 2 x G081

B233 LED emergency light 6...15 V=/~

If the operating voltage for the LED-Emergency light (transfo, power supply, battery) breaks down, the LED still luminesces > 15 minutes! During this time an Gold-Cap-Elca supplies the LED with current. Use: marking of emergency exits, switches, locks etc. Operating voltage: 6...15 V direct current (DC) or alternating current (AC).

Technical data:

Operating voltage: 6...15 V=/~
 Board dimensions: approx. 45 x 12 mm



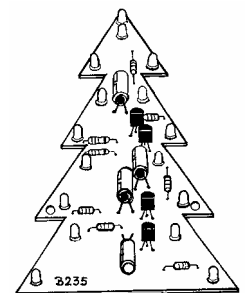
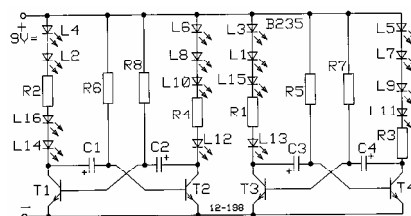
Price: 6.60 €
Fitting case: G023

B235 Christmas tree

With 16 blinking LED's. For decoration purposes. Dimensions: approx. 10 x 7,5 cm.

Technical data:

Operating voltage: 9 V=
 Board dimensions: approx. 10 x 7,5 cm



Price: 5.80 €
Fitting case: G100

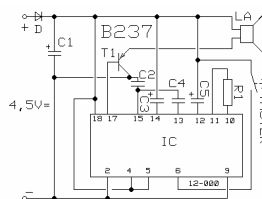
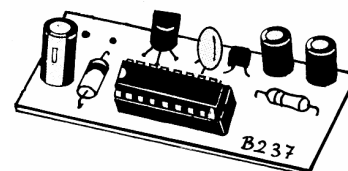
B237 6-Melody generator

Every time after pressing the key, the melody generator plays one of the 6 stored melodies in succession. The melodies always play for about 15...25 seconds. Operating voltage: 3...4.5 V=. Required loudspeaker: 4...8 Ohm. Use: doorbell, break signal, etc.

Technical data:

Operating voltage: 3...4.5 V=

Board dimensions: approx. 55 x 21,5 mm



Price: 6.60 €
Fitting case: G024

B239 Electronic wheel of fortune

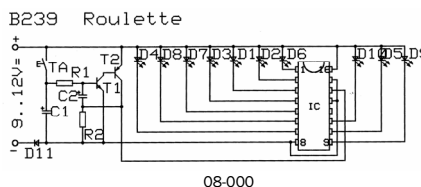
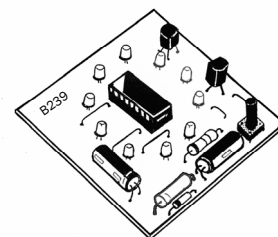
After releasing the push-button, the light signal rotates quickly at the 10 LED's, slows down and then stops at random at one of the LED's. During operation all LED's shine except that LED that just receives the signal. That's why the luminous board looks very decorative.

Technical data:

Operating voltage: 9...12 V=

Number of LED's: 10

Board dimensions: approx. 56 x 56 mm



Price: 5.80 €
Fitting case: G100

B240 Computer laser show

Laser Show with 3 reflecting motors for triggering via a PC > 350 MHz (connection at the LPT 1 printer port). The enclosed software is intended for the operating system WIN 95...98. Laser is not enclosed (you may connect directly almost every spot laser 3 V < 50 mA available on the market). Larger lasers require an own power supply. Many different laser figures can be projected onto a wall and be stored in the computer. Operating voltage: 12 V= < 400 mA.

Technical data:

Motors: 3 individually controlled reflecting motors

Operating voltage: 12 V stabilized DC voltage

Power consumption: < 400 mA

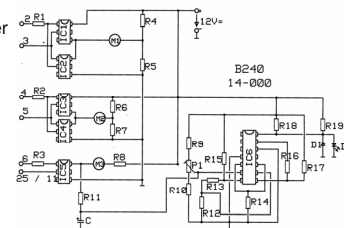
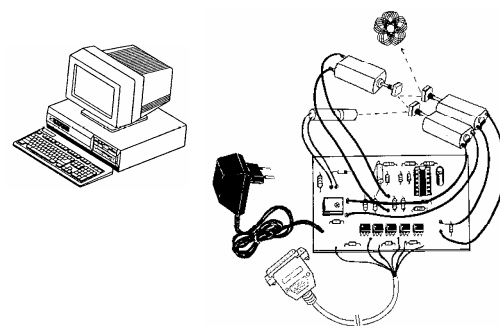
Control: via an PC at the LPT1 printer port

Software: enclosed, for operating system WIN 95...98

Insulation: electrical separation between computer and laser control: 4 optocouplers

Laser: not enclosed. For spot lasers. Laser 3 V up to 50 mA may be operated directly at the circuit, larger

lasers require an own power supply.
 Board dimensions: approx. 100 x 60 mm



Available accessory: Laser module L005, see page 30

Price: 32.90 €

B241 10-Channel infrared remote control

For switching 10 different applications via relay On or Off. 1 of the 10 different relays, respectively can be switched on or off each time. Transmitter: 3 V battery, receiver: 12 V. Range: approx. 5 m (with convergent lens approx. 10 m, does not belong to the scope of delivery). Max. rupturing capacity of the installed relay: 25 V 0,25 A AC or DC. If this capacity is not sufficient, stronger relays may be topped. 8 SMD diodes have to be soldered into the board.

Technical data:

Channels: 10, each with own relay output

Rupturing capacity: 0.25 A direct or alternating voltage per relay

Range: approx. 5 meters, when superposing a convergent lens at the receiver approx. 10 m (not part of the scope of delivery)

Operating voltage transmitter: 3 V=

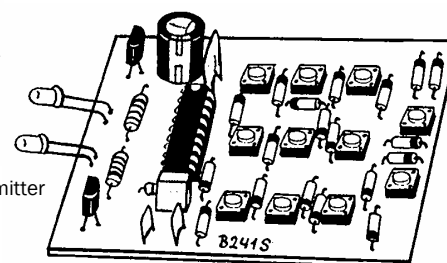
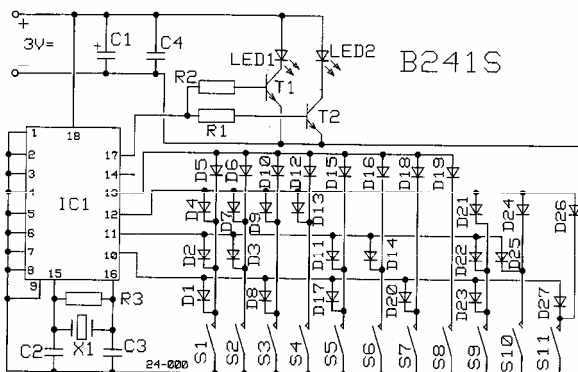
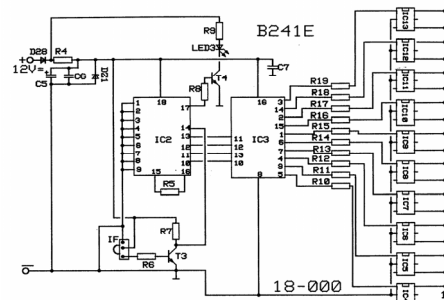
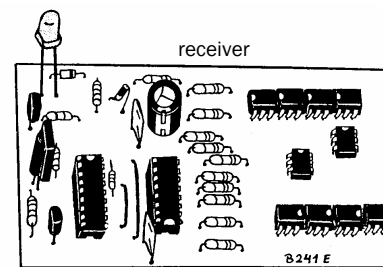
Current consumption transmitter: < 20 mA in transmit mode

Operating voltage receiver: 12 V=

Current consumption: < 20 mA

Board dimensions receiver: approx. 55 x 75 mm

Board dimensions transmitter: approx. 105 x 55 mm



Price: 9.80 €

Fitting case: G085 + G080/241

B243 Marten and vermin repellent 12 V=

This device produces a high ultrasonic sound (approx. 23 kHz). Martens, mice, etc. find this sound extremely annoying and these animals will leave that place (most). Ideal for installation into cars (as protection against martens), in houses against mice, etc. Operating voltage: 12 V...16 V=, approx. 50 mA.

Technical data:

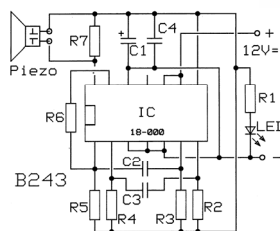
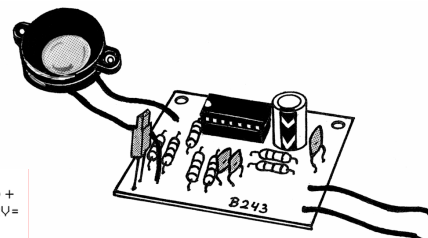
Operating voltage: approx. 12...16 V=

Current consumption: < 0,05 A

Frequency: approx. 23 kHz

Loudspeaker: spherical piezoelectric loudspeaker Ø approx. 30 mm

Board dimensions: approx. 45 x 29 mm



Price: 5.80 €

Fitting case: G020N

Assembly + Soldering:

The components have to be inserted into the board according to the assembly print. Depending on the basic grid distance of the borings on the board the components have to be mounted in horizontal or vertical position. When bending the leads of the components please pay attention that these will not be bent directly at the component! The components might be damaged in such a case! Hold the wires with pointed pliers and bend them directly at the pliers so that no lateral powers are transmitted into the interior of the component!

Soldering on the board may only be done with a modern electronic soldering copper (15...30 Watt) with a fine point and colophonium-containing electronic soldering tin! Do not use acidic flux! Before supplying the soldering tin, at first heat the soldering joint with the point of the soldering copper. Press the point slightly against the soldering joint so that the land for soldering on the board and the lead of the component are heated simultaneously. After approx. 1...2 seconds you may add the soldering tin without removing the soldering copper from the soldering joint in the meantime. The soldering tin must lead cleanly around the wire of the component and has to surround the wire cleanly without forming craters. Only then the soldering copper and then the soldering may be removed. Furthermore attention must be paid that no "soldering tin bridges" are made to the adjoining copper tracks and lands for soldering if these are not electrically connected with the soldering joint anyway. The whole soldering at one soldering joint should not exceed a period of 5 seconds at most, as otherwise the components may be destroyed. The most frequent mistakes during soldering are: "cold soldering joints" and "short circuits due to tin bridges or end of wires which were not cut off if these get into touch with an adjoining soldering joint". The soldering point must always be clean and free from scale and oxide. If this cannot be removed by simply wiping with a cloth, file the point once again and tin-plate it immediately again. However, this should only be done with simple copper points. The modern permanent soldering points merely have to be wiped with a humid cloth.

1. Heating the joint.

Important! Correct soldering!

Soldering
In order to solder the kits it is especially suitable to use a commercial 15...30W soldering iron and 60% solder tin. There should never be any soldering out of the edges of the soldering spot!

- 1) The conducting line and the wire lead of the kit have to be heated up at the same time.
- 2) The solder tin should then be melted at the soldering spot (not at the soldering iron!). The solder tin should flow evenly round the soldering spot.
- 3) Now, cut off the sticking out wire. That's how the finished soldering spot should look like!

2. Adding solder material.

3. Final soldering spot.

False

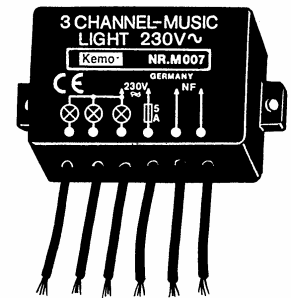
Correct

M007 3-Channel music light

Music light with 3 pre-fixed channels. The module creates a special play of light full of life (with alternating effects). Power: 230 Volt~, 3 x 500 W max.

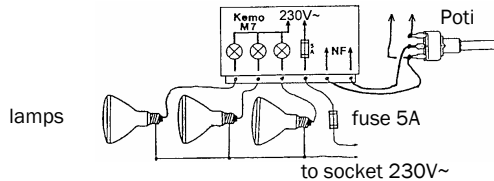
Technical data:

Operating voltage: 230 Volt~
 Channels: 3, of that 1 pause channel
 Power: max. 1500 W (per channel 500 W)
 NF-sensitivity: approx. 2 Watt
 Dimensions: approx. 70 x 45 x 20 mm



Example of connection:
 The shown accessories are not included!

to loudspeaker receptacle, e.g. radio



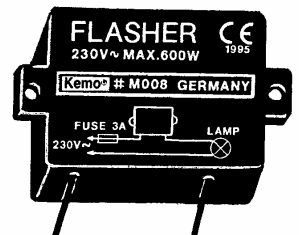
Price: 16.30 €

M008 Flasher 230 V~

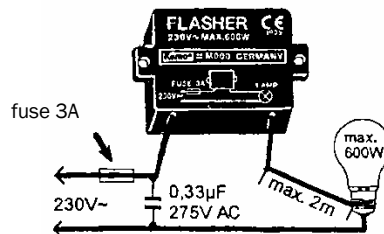
Electronic flasher unit for glow lamps up to max. 600 Watt, 230 Volt~. Slow flash period. 95 % of brightness due to full-wave control. USAGE: advertising lights, alarm systems.

Technical data:

Operating voltage: 230 Volt~
 Lamp connector: max. 600 Watt
 Flash sequence: 1 x/s ± 50 %
 Dimensions: approx. 60 x 45 x 20 mm



Example of connection:
 The shown accessories are not included!



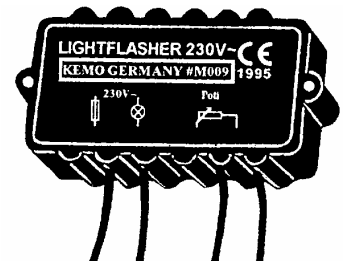
Price: 10.80 €

M009 Light flasher 230 V~

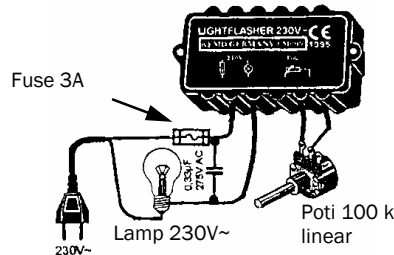
...flashes glow lamps 230 V~ approx. 15...200 times per minute (adjustable). It is possible to connect 230 V~-glow lamps up to max. 500 Watt. For operation, it is necessary to connect a potentiometer 100 k. Ideal for advertising or warning lamps, shop-window or party room decorations.

Technical data:

Operating voltage: 230 V~
 Flash sequence: adjustable approx. 15...200 x per minute
 Adjusting: Potentiometer 100 k lin 1 W (not enclosed)
 Load: Lamps 230 V~, max. 500 W
 Dimensions: approx. 69 x 36 x 23 mm



Example of connection:
 The shown accessories are not included!



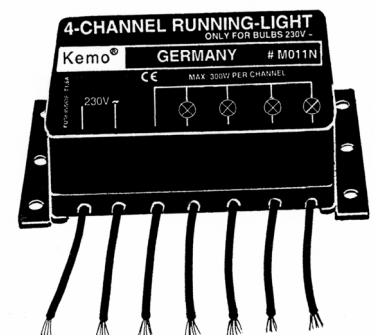
Price: 13.40 €

M011N 4-Channel running light 230 V~

This running light makes 4 lamps or lamp groups light up one after the other at regular intervals and go out again. The running speed is adjustable: approx. 20...200 cycles per minute. For incandescent bulbs up to 300 Watt at maximum per channel (maximum total output: 1200 W). Depending on the connection, the module may be used for various applications. For luminous advertising in shop windows, for exhibition stands, in discotheques, for party rooms or light warning devices in danger zones.

Technical data:

Operating voltage: 230 Volt~
 Channels: 4
 Load per channel: max. 300 Watt
 Running speed: adjustable
 Dimensions: approx. 144 x 70 x 53 mm (with fastening straps)



Price: 27.50 €

M012 Motor and lamp controller

(Dimmer) 240 V~ / 110 V~, max. 1200 W / 600 W

...regulates incandescent lamps, heaters, hand drills, etc. via a potentiometer. Operating voltage: 110...240 V~. Max. admissible current: 6 amperes (3 A constant duty). At 230 V~ this corresponds to 1200 / 600 W and to 600 / 300 W at 110 V~. The following expansion module is available: M150. With it control may be done with control voltages or digital signals instead of the potentiometer.

Technical data:

Admissible operating voltage: AC 110...240 V, 50...60 Hz

Operating temperature range: approx. - 30 ° ...+ 60 °

Max. admissible current: 6 A (constant duty: 3 A)

At 110 V~ this corresponds to maximally 600 Watt or constant duty 300 Watt, respectively, or to maximally 1200 Watt or constant duty 600 Watt, respectively, at 230V~

Duty cycle: 100 % at 3 A or 20 % (max. 3 min.) at 6 A, respectively

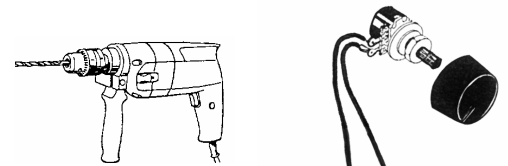
Control: via a firmly connected rotary potentiometer

Loads: for ohmic or inductive loads

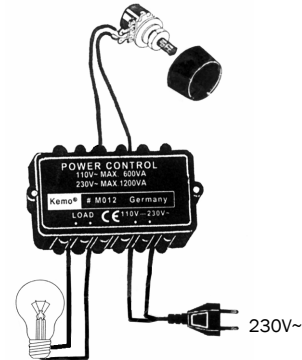
Dimensions: approx. 61 x 35 x 23 mm

Available attachments: auxiliary module M150 DC and Pulse Converter.

When superposing this module, it is also possible to control the dimmer module M012 with control voltages (1...5 V= or 3...12 V= or 6...24 V=) or with TTL pulses (optionally in each case).



Example of connection:
The shown accessories are not included!



Load (e.g. lamp)

Price: **16.30 €**

M013 Twilight switch

This electronic twilight switch connects automatically by means of an installed relay lamps (e.g. energy saving lamps) or other consumers at nightfall and off again at daybreak. The module may also work the other way round: on at daybreak (for advertising displays, fountains etc.) and off at nightfall. Floating loads up to 3 A may be switched. Operating voltage: 220...240 V~.

Technical data:

Operating voltage: 210...240 V~

Current consumption: < 40 mA

Switching contact (floating): 1 x switch-over max. load 3 A (resistive load) max. 1 A (inductive load)

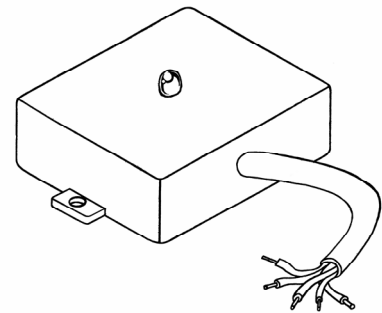
Turn-on brightness: approx. 10 Lux ± 50 %

Turn-off brightness: approx. 60 Lux ± 50 %

Delay in reaction: approx. 30 sec. ± 50 %

Temperature range: approx. - 15 °C...+ 40 °C

Dimensions: approx. 70 x 60 x 22 mm (without fastening straps)



Price: **10.80 €**

M015N Potential transformer, adjustable, max. 1,5 A, input: 6...28 V= output: 3...15 V=

The input voltage must be at least 3 V higher than the adjusted output voltage. The adjusted output voltage is stabilized or short circuit-proof. For operation of appliances with lower voltages at a 12 V or 24 V car battery or power supplies.

Technical data:

Input voltage: 6...28 V=

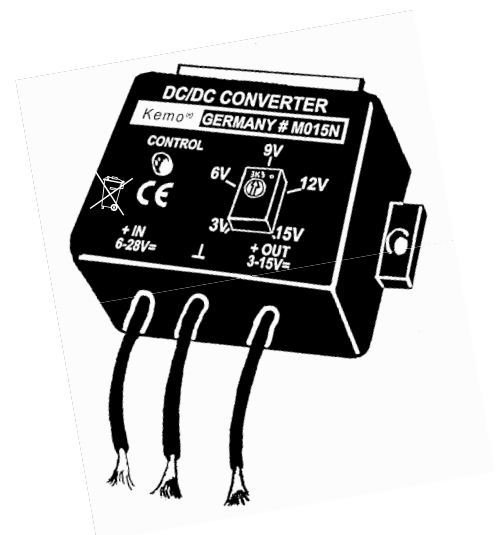
Output voltage adjustable: 3...15 V (electronically stabilized)

Note: The input voltage must be at least 3 V higher than the adjusted output voltage

Max. output current: 1,5 A

Max. dissipation: approx. 3 W without heat sink, approx. 10 W with heat sink (not enclosed)

Dimensions: approx. 59 x 44 x 20 mm (without fastening straps)



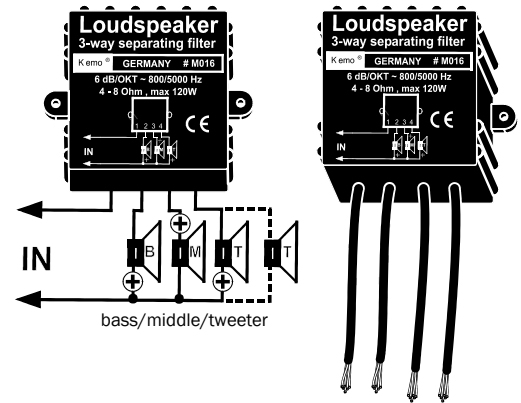
Price: **10.80 €**

M016 Loudspeaker separating filter 3-way 4...8 Ohm, max. 120 W

For one bass speaker, mid speaker and one till two tweeter. 4...8 Ohm, Separating frequency: approx. 800 / 5000 Hz, 6 dB.

Technical data:

Max. music load: 120 Watt
Filter frequencies: approx. 800 / 5000 Hz
Edge steepness: approx. 6 dB
For loudspeaker: 4...8 Ohm
Dimensions: approx. 67 x 65 x 37 mm (without fixing straps)



Price: 5.50 €

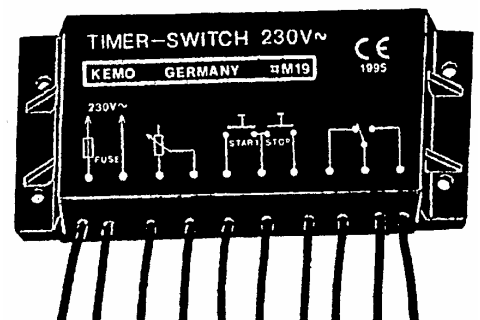
M019 Automatic light switch 230 V~ time switch approx. 1 sec. to 15 min.

...connects other devices by means of the installed, potential-free relay point 1 x change over (max. 3 A) after key depression and disconnects them again automatically at the end of the adjusted time. The time lapse may be stopped at any time by pressing the second key. Use: automatic time switch for staircase lighting, for exposure devices, alarm devices, electric toys etc.

In addition a potentiometer 1 M lin. and 2 push-buttons for "Start" and "Stop" are necessary.

Technical data:

Operating voltage: 230 Volt~
Max. breaking capacity: 3 A, 1 x change over
Duration: approx. 1 sec....> 15 min.
Dimensions: approx. 120 x 50 x 24 mm



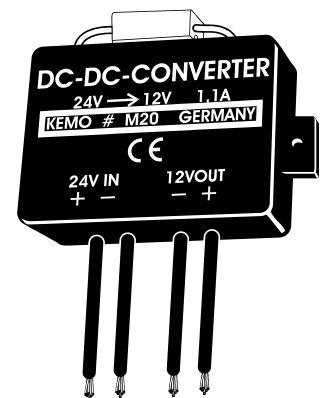
Price: 13.40 €

M020 Voltage transformer from 24 V= to approx. 13.8 V= (for 12 V= devices), max. 1.1 A

With this module you may operate 12 V= devices at a 24 V= truck or marine engine battery. Maximum 1,1 A. Several modules may be connected in parallel if the power shall be increased, e.g. 2 modules do 2,2 A.

Technical data:

Input voltage: approx. 24...30 V
Output voltage: approx. 13.8 V (for 12 V devices)
Loading capacity: max. 1.1 A (3 min. 5 % duty cycle), continuous power: 0.5 A
Temperature range: approx. - 15...+ 50 degree C
Several modules may be connected in parallel to increase the power.
Dimensions: approx. 60 x 45 x 20 mm (without fixing straps)



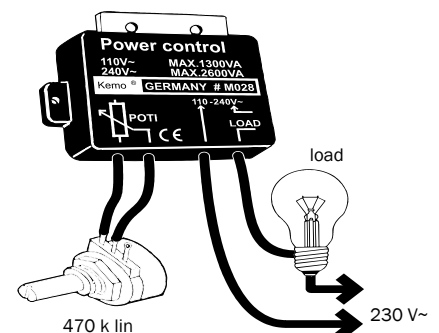
Price: 10.80 €

M028 Power control 110...240 V~ 2600 VA

Control of resistive + inductive loads (e.g. motors, heatings, incandescent lamps, etc., if they are phase-controllable). It is not possible to control: e.g. fluorescent lamps, motors with starting capacitor. Required potentiometer: 470 K lin (not attached). Operating voltage: 110...240 V~, max. current 12 A. At 110 V~ this corresponds to max. 1320 VA and to max. 2880 VA at 240 V~.

Technical data:

Dimensions: approx. 60 x 56 x 23 mm (without fixing straps)



Price: 19.00 €

Available attachments: auxiliary module M150 DC + Puls Converter. When superposing this module, it also possible to control the dimmer module M028 with control voltages (1...5 V= or 3...12 V= or 6...24 V=) or with TTL pulses (optionally in each case), M150 see page 58.

Example of connection:
The shown accessories are not included!

M028N Power control 110...240 V~ 4000 VA

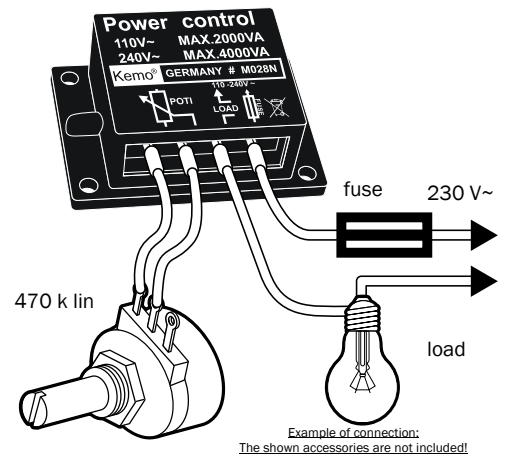
For controlling ohmic + inductive loads (e.g. motors, heating, incandescent lamps etc. if these can be regulated in phase control). With this module it is possible to regulate with control voltages or digital signals instead of the potentiometer.

Technical data:

Operating voltage: 110...240 V AC
 Max. current: 18 A when mounting on a heat sink. Without additional heat sink: max. 6 A (peak: max. 25 A/10 sec.)
 Regulation: phase control
 Connectable loads: ohmic + inductive loads (see circuit description)
 Dimensions: approx. 86 x 60 x 33 mm

Available attachments: auxiliary module M150 DC + Puls Converter. When superposing this module, it also possible to control the dimmer module M028N with control voltages (1...5 V= or 3...12 V= or 6...24 V=) or with TTL pulses (optionally in each case), M150 see page 58.

Price: 23.80 €



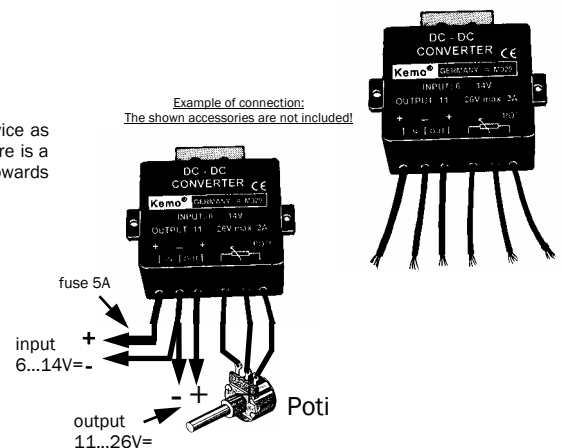
M029 Voltage converter input: 6...14 V=, output: 11...26 V=

This electronically controllable DC voltage converter transforms a low input voltage in to a nearly twice as high output voltage. Max. output current: approx. 2 ampere. Output voltage decreases whenever there is a higher load. With the help of an additional potentiometer of 4,7 k lin. output voltage can be limited towards higher rates at input voltages of over 10 V.

Technical data:

Input voltage: 6...14 V direct current
 Output voltage: 11...26 V direct current (depending on load)
 Output current: max. 2 A
 Dimensions: approx. 70 x 73 x 26 mm (without fixing straps)

Price: 21.60 €



M031N Universal amplifier 3,5 W

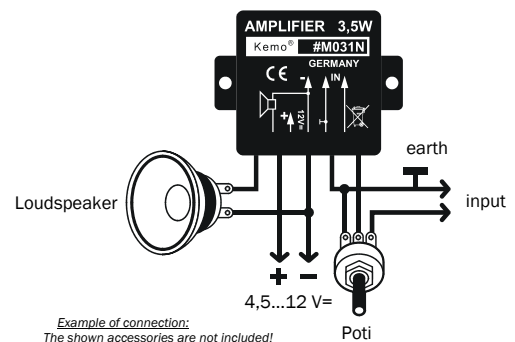
4,5...12 Volt=, approx. 40...20.000 Hz. For loudspeaker 4...16 Ohm. Input sensitivity: < 80 mV.

Technical data:

Output: max. 3.5 Watt music power
 Operating voltage: 4,5...12 V=
 Loudspeaker connection: 4...16 Ohm
 Input sensitivity: < 80 mV
 Frequency response: approx. 40...20.000 Hz
 Dimensions: approx. 40 x 40 x 12 mm (without fixing straps)

Available accessory: M040 Universal preamplifier, see page 40

Price: 8.10 €



M032 Universal amplifier 12 W

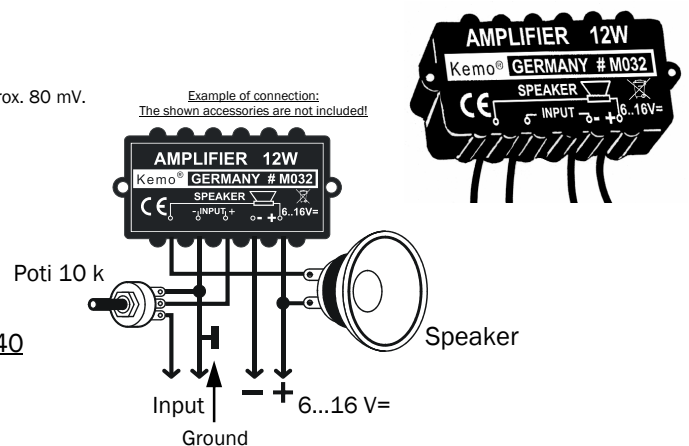
6...16 Volt, approx. 40...20.000 Hz. For loudspeaker 4...16 Ohm. Input sensitivity: approx. 80 mV. Musical power: max. 12 W.

Technical data:

Operating voltage: 6...16 V=
 Current consumption: max. 800 mA
 Input sensitivity: < 80 mV
 Loudspeaker connection: 4...16 Ohm
 Music power: max. 12 W with 16 V at a 4-Ohm loudspeaker
 Frequency response: approx. 40...20.000 Hz
 Dimensions: approx. 62 x 36 x 23 mm (without fixing straps)

Available accessory: M040 Universal preamplifier, see page 40

Price: 10.80 €

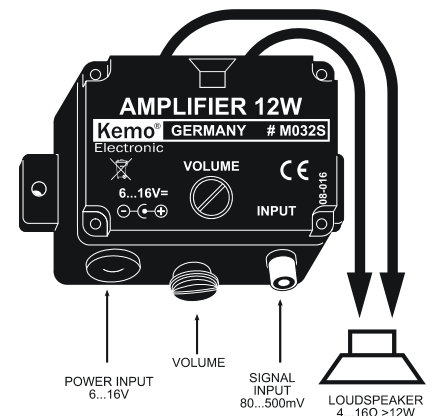


M032S Universal Amplifier 12 W "Plug & Play"

Amplifying module with jacks used for the signal input and for the power supply. Inserted loudspeaker regulator and loudspeaker connection are over the cables.

Technical data:

Operating voltage: 6...16 V=
 Current consumption: max. 800 mA
 Input sensitivity: < 80 mV
 Loudspeaker connection: 4...16 ohm
 Music power: max. 12 W with 16 V at a 4 ohm loudspeaker
 Frequency response: approx. 40...20.000 Hz
 Dimensions: approx. 71 x 50 x 42 mm (without fixing straps)



Available accessory: M040 Universal preamplifier, see page 40

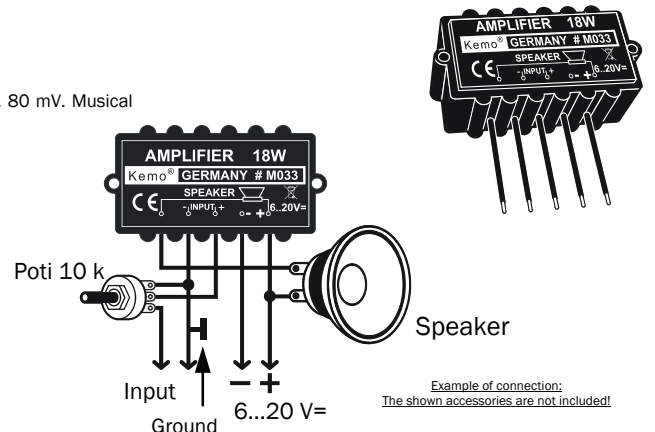
Price: 16.30 €

M033 Universal amplifier 18 W

6...20 Volt, approx. 40...20.000 Hz. For loudspeaker 4...16 Ohm. Input sensitivity: approx. 80 mV. Musical power: max. 18 W.

Technical data:

Operating voltage: 6...20 V=
 Current consumption: max. 800 mA
 Input sensitivity: < 80 mV
 Loudspeaker connection: 4...16 Ohm
 Music power: max. 18 W with 20 V at a 4-Ohm loudspeaker
 Frequency response: approx. 40...20.000 Hz
 Dimensions: approx. 62 x 36 x 23 mm (without fixing straps)



Available accessory: M040 Universal preamplifier, see page 40

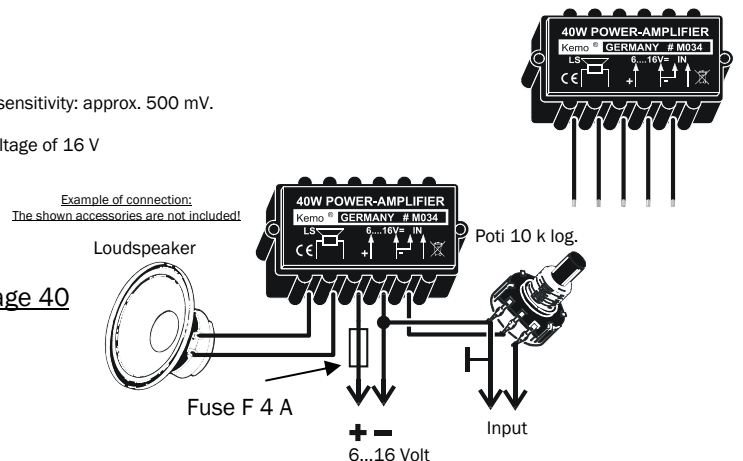
Price: 13.40 €

M034 Power amplifier 40 W

6...16 Volt, for loudspeaker 4...8 Ohm, frequency range: approx. 20...25.000 Hz, sensitivity: approx. 500 mV.

Technical data:

Musical power: max. 40 W at 4 Ohm loudspeaker load in case of an operating voltage of 16 V
 Operating voltage: 6...16 V
 Connectable loudspeakers: 4...8 Ohm
 Sensitivity: < 500 mV
 Frequency range: approx. 20...25.000 Hz
 Dimensions: approx. 70 x 45 x 29 mm



Available accessory: M040 Universal preamplifier, see page 40

Price: 21.60 €

M038N Converter from 24 V= to 12 V= (13,8 V=), max. 3 A

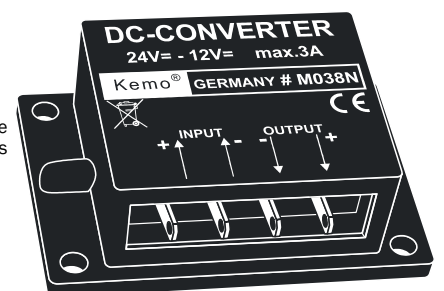
...for operation of 12 Volt= devices at a 24 Volt= lorry or boat battery. Short circuit-proof, shock-proof module.

This power-potential transformer module has to be mounted on a heat sink or the like if the maximum power shall be drawn as continuous duty. The module is short circuit-proof and has a built-in thermal circuit breaker which disconnects in case of overheating.

Application: to operate larger car radios, CB radio equipment etc. at a 24 V lorry or bus battery.

Technical data:

Input voltage: 24...26 V
 Output voltage: approx. 13,8 V (equivalent to a full loaded 12 V battery)
 Maximum current: 3 A
 Dimensions: approx. 86 x 60 x 32 mm



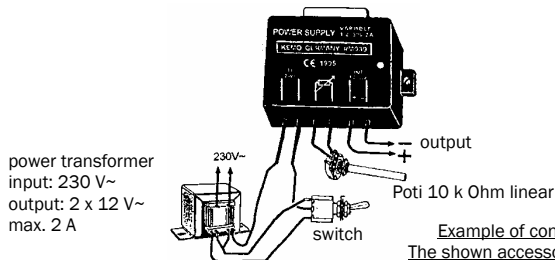
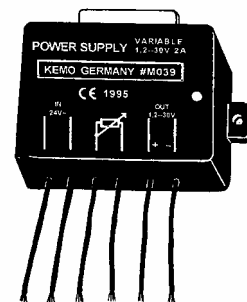
Price: 13.40 €

M039 Power supply approx. 1,2...30 V=, 2 A

Steplessly adjustable, stabilized power supply with integrated rectifying + filtering. Adjustable in 2 stages: stage 1 : approx. 1,2 V...12 V, stage 2 : approx. 12 V...30 V. For operation is required: 1 potentiometer 10 k lin. 1 transformer 2 x 12 V 2 A, 1 switch 1 x change over 2 ampere 1 cooling element approx. 10 x 8 x 5 cm or larger.

Technical data:

Operating voltage: approx. 2 x 12 V~, 2 A
 Output voltage: approx. 1,2...30 V= adjustable
 Max. current load: 2 Ampere
 Required potentiometer: 10 k Ohm lin.
 Dimensions: approx. 82 x 73 x 33 mm



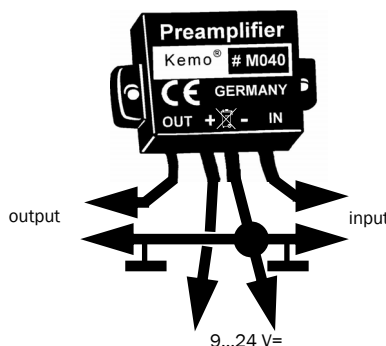
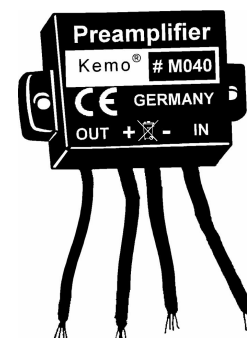
Price: 16.30 €

M040 Universal preamplifier

...for microphones and diverse usages. Operating voltage: 9...24 V=. Frequency range: approx. 10 Hz...100 kHz. Input: approx. 2...50 mV. Output: approx. 200 mV to 1 V. This mini module is simply connected between a power amplifier (e.g. Kemo M032 or M032S 12 W) and a weak signal source (e.g. microphones).

Technical data:

Operating voltage: approx. 9...24 V=
 Input voltage: approx. 2...50 mV
 Output voltage: approx. 200 mV...1 V
 Amplification: approx. 65 x at UB 9 V, approx. 80 x at UB 12 V, approx. 100 x at UB 24 V
 Current consumption: < 2 mA
 Dimensions: approx. 30 x 25 x 15 mm



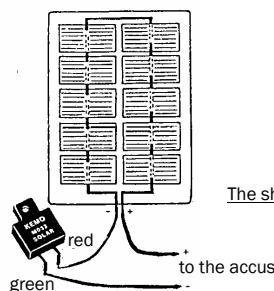
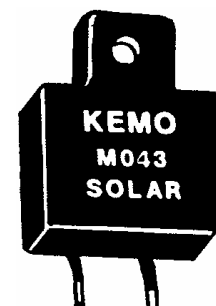
Price: 8.10 €

M043 Solar discharge protection module

...prevents reverse current (discharge) between solar elements and accu, whenever the solar elements do not create much current because of inferior light conditions. Voltage loss merely approx. 0,35 V at 300 mA! Max. 1,5 A.

Technical data:

Connection: cable connection
 Max. current load: 1,5 Ampere
 Dimensions: approx. 25 x 22 x 17 mm



Example of connection:
 The shown accessories are not included!

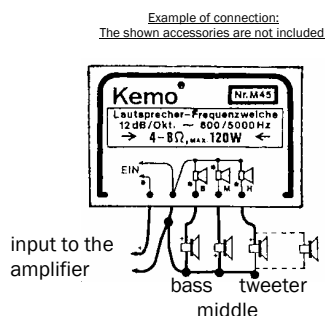
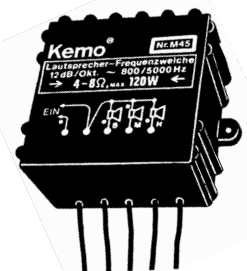
Price: 3.70 €

M045 Cross-over network 3-ways, max. 120 W

For one bass speaker, mid speaker and one or two tweeter 4...8 ohm. Separating frequency: approx. 800 / 5000 Hz. The rate of change of the attenuation is 12 dB / octave.

Technical data:

Type: 3-way separating filter
 Max. power: 120 Watt
 Speaker connection: 4...8 Ohm
 Separating frequencies: 800 / 5000 Hz
 Dimensions: approx. 67 x 65 x 37 mm



Price: 8.10 €

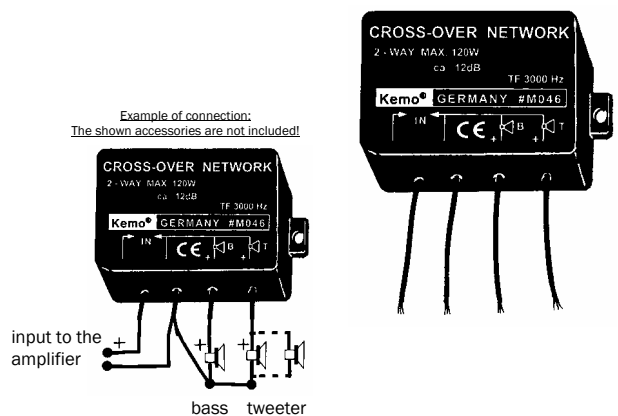
M046 Cross-over network 2-way, 4...8 Ohm max. 120 W

Cross-over network, separating frequency: approx. 3000 Hz. 12 dB. Usage: For one bass speaker and mid range/tweeter or one wide range and one tweeter (dynamic or piezo).

Technical data:

Max. load: 120 Watt
Separating frequency: approx. 3000 Hz, 12 dB
For loudspeaker: 4...8 Ohm
Dimensions: approx. 60 x 45 x 20 mm (without fixing straps)

Price: 5.50 €



M048 Ultrasonic generator

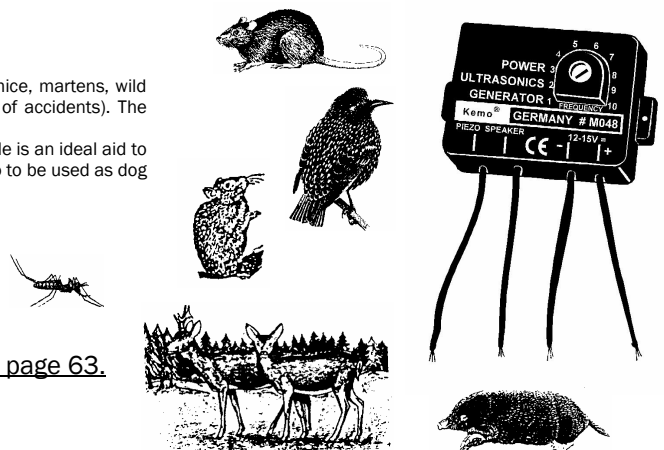
Through ultrasonic sounds it is possible to scare away animals and insects: e.g. rats, mice, martens, wild rabbits, mosquitoes. If mounted at the car, roe will be put to rout (decreased danger of accidents). The pulsating audio frequency is adjustable from approx. 10...40 kHz ($\pm 20\%$). Operating voltage: 12...15 Volt=. For connection of a piezo-treble loudspeaker. The module is an ideal aid to scare away destructive animals out of your pantry, kitchen, storehouses, garden, etc. Also to be used as dog whistle. There are some birds species which will be scared away out of your fruit trees.

Technical data:

Operating voltage: 12...15 V=
Current consumption: < 50 mA
Loudspeaker output: only for up to 5 piezo loudspeakers!
Audio frequency: adjustable approx. 10...40 kHz ($\pm 20\%$)
Dimensions: approx. 60 x 45 x 23 mm (without fixing straps)

Recommended piezo-tweeter L001, L002, L003 + P5123, see page 63.

Price: 10.80 €



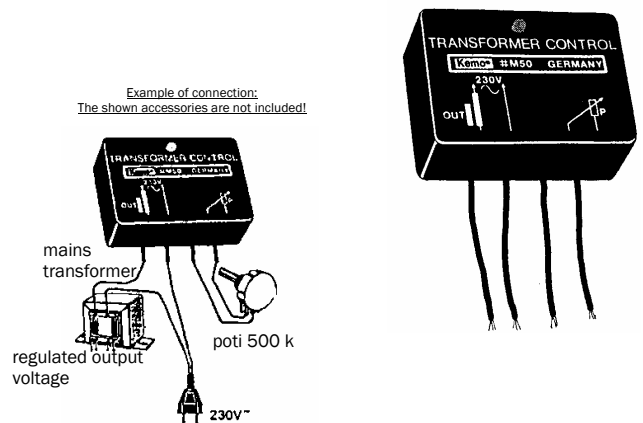
M050 Transformer control

With this transformer voltage control module it is possible to regulate mains transformer 230 V~ (max. 400 W) at the input side (primary) in the power between approx. 5...95 %. Required potentiometer: 500 k. Usage: Construction of regulable high-power mains controls, a.c. voltage mains supplies, control of transformers for low-voltage halogen lamps, control of high-voltage transformers etc.

Technical data:

Operating voltage: 230 V~
Max. power: 400 Watt
Required potentiometer: 500 k linear
Dimensions: approx. 71 x 49 x 26 mm

Price: 11.80 €



M055 Stereo amplifier 3 W

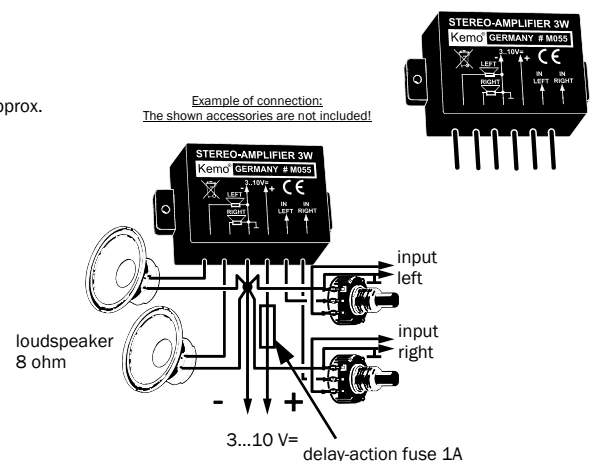
Universal stereo amplifier with a wattage of max. 2 x 1.5 W musical power. UB: 3...10 V, F: approx. 20...20.000 Hz. Loudspeaker socket: 8...32 ohms. Sensitivity: < 100 mV.

Technical data:

Output power: max. 3 W musical power (2 x 1.5 W)
Operating voltage: 3...10 V
Loudspeaker socket: 8...32 ohms
Input sensitivity: < 100 mV
Frequency response: approx. 20...20.000 Hz
Dimensions: approx. 60 x 44 x 20 mm (without fixing straps)

Available accessory: M040 Universal preamplifier, see page 40.

Price: 10.80 €



M057 Accumulator charging module, automatic

Constant current charger for accumulators 1,2...18 V=. Reversible charging currents (depending on the accumulator); 0,01...1 A. The charging current adjusts automatically. A transformer is required, too, which has approx. 10 V more voltage than the accumulator. For all accumulators which may be charged with constant current: e.g. NiCd, NiMH, lead or gel accumulators. Not suitable for lithium ion accumulators!

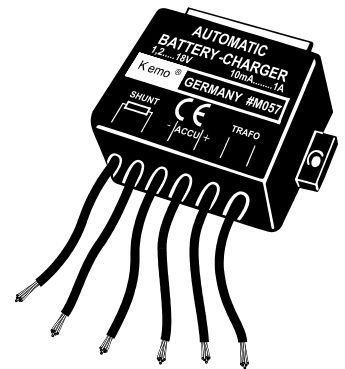
Technical data:

Accumulators capable of being charged: 1,2...18 V NiCd, NiMH, lead and gel accumulators, not for lithium ion accumulators!

Charging current: constant charging current adjustable in steps: approx. 10 - 20 - 50 - 100 - 200 - 500 - 1000 mA

Required transformer AC: always 10 V higher than the voltage of the accumulator to be charged, max. 28 V
The maximum output current of the transformer should be higher than the desired charging current of the accumulator.

Dimensions: approx. 53 x 45 x 21 mm



Price: 16.30 €

M058N Microwave leakage tester

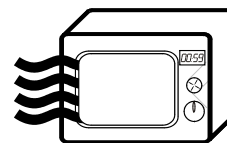
...indicates leakage radiation at microwave stoves, which flows out through door hinges, rubber sealings or screenings. Microwaves signify a form of high energy which goes through plastic, ceramics and also live tissue. An indispensable device for your health and environmental preservation! Operating voltage 9 V=, indication through LED!

Technical data:

Operating voltage: 9 V=

Display: light-emitting diode

Dimensions: approx. 101 x 60 x 26 mm



Price: 5.50 €

M060 Universal car noise filter

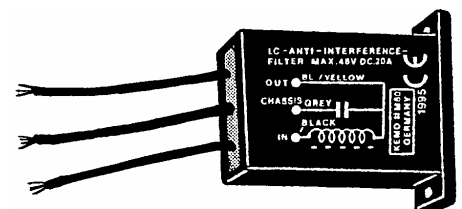
Highly effective, sealed LC-noise filter for cars. The filter has to be placed within the current lead of the disturbing resp. of the disturbed device and will filter a great deal of the interferences. Max. 10 (20) Ampere; maximal operating voltage 48 Volt.

Technical data:

Operating voltage: max. 48 Volt

Current load: max. 10/20 Ampere

Dimensions: approx. 47 x 45 x 22 mm



Price: 8.10 €

M061 Alarm monitor

Small alarm monitor with 2 coloured LED's which quick and alternately flash in a special brightness. Operating voltage: 9...12 V=. Usage: For mounting in cars, window-sills etc. as visible deterrent against thieves. The monitor could be mounted without or in combination with an alarm system.

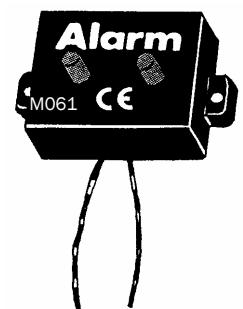
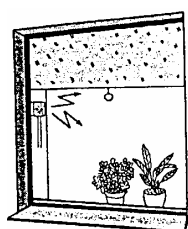
Technical data:

Operating voltage: 9...12 V direct-current voltage

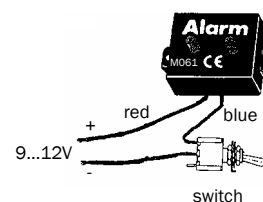
Current consumption: approx. 28...40 mA

Flash period: approx. 3...6 x per second

Dimensions: approx. 30 x 25 x 15 mm



Example of connection:
The shown accessories are not included!



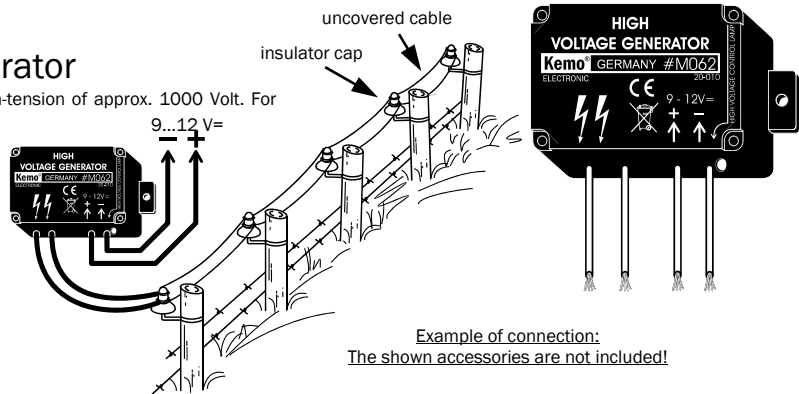
Price: 5.50 €

M062 Mini-fence-high-voltage generator

...produces from a battery voltage of 9...12 Volt a pulsating, weak high-tension of approx. 1000 Volt. For electrically operated fences for small animals, as thief-protection etc.

Technical data:

Operating voltage: 9...12 V=
 Power consumption: approx. 40 mA
 Output voltage: pulsating max. 1000 V / 0,5 joule
 Pulse frequency: approx. 1 Hz (1 pulse per second)
 High-voltage display: fluorescent lamp
 Max. permissible high-voltage cable length: 100 m
 Dimensions: approx. 72 x 50 x 42 mm (without fixing straps)



Example of connection:
 The shown accessories are not included!

Price: 16.30 €

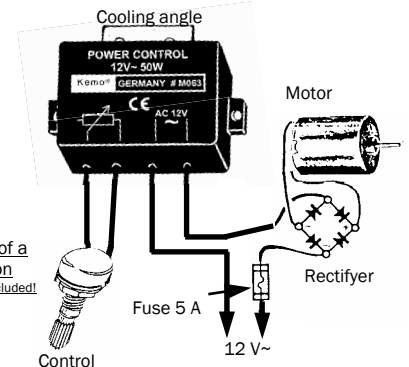
M063 Dimmer 12 V~, 50 W (or 24...48 V~)

...controls continuously 12 V incandescent lamps (e.g. halogen lamps), 12 V heatings, motors (also direct current motors with added rectifier), etc.. Only to be operated at a 12 V~ transformer (50...60 Hz), not suitable for DC voltage (accumulator)! It is also possible to control 24 V~ (linear potentiometer 4,7 k) or 48 V~ (linear potentiometer 2,2 k) by exchanging the potentiometer.

Technical data:

Operating voltage: 12 V~ (10...14 V~) 50...60 Hz
 (for normal iron core transformers only, not for electronic halogen transformers)
 Working mode: phase control
 Loading capacity:
 for ohmic or inductive loads such as lamps, motors, electromagnets etc. up to 50 W (4,5 A)
 Dimensions: approx. 59 x 44 x 20 mm (without fixing straps)

Example for connection of a
 dc motor with rectification
 The shown accessories are not included!



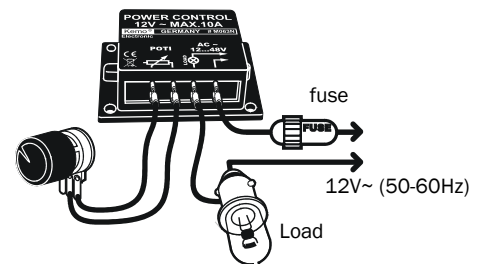
Price: 16.30 €

M063N Dimmer 12 V~ max. 10 A (or 24...48 V~)

...Controls continuously 12 V~ motors (also direct current motors with added rectifier), incandescent lamps, heatings, etc. Only to be operated at a 12 V~ transformer (50...60 Hz), not suitable for DC voltage (accumulator). It is also possible to control voltages such as 24 V~ or 48 V~ by exchanging the potentiometer.

Technical data:

Operating voltage: 12 V~, 50...60 Hz (for normal iron-core transformers only, not for electronic transformers).
 If the enclosed potentiometer is exchanged for a potentiometer 100 K linear, it is also possible to control 24 V~ or a potentiometer 220 K linear is required for 48 V~ (not enclosed).
 Mode of operation: phase control
 Control range: approx. 0...90 %
 Loading capacity: for ohmic or inductive loads up to max. 10 A (with cooling) or max. 4 A without additional cooling, e.g. AC motors, incandescent lamps, heatings, transformers, etc.
 Dimensions: approx. 87 x 60 x 32 mm (with mounting bottom)



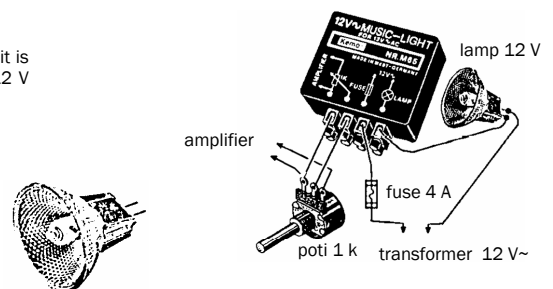
Price: 16.30 €

M065 Halogen music light for 12 V~ lamps

Sensitive music light for 12 V glow lamps or halogen lamps up to max. 50 W. For operating the device it is necessary to connect a potentiometer 1 k Ohm lin. in order to control sensitivity. Operating voltage: 12 V transformer (alternating voltage). Not suitable for direct voltage (accu).

Technical data:

Operating voltage: 12 V~ (transformer)
 Load: max. 50 W (lamps)
 Adjustment: through external poti 1 k lin.
 Connection: at the loudspeaker output of an amplifier or radio
 Dimensions: approx. 53 x 57 x 28 mm



Example of connection:
 The shown accessories are not included!

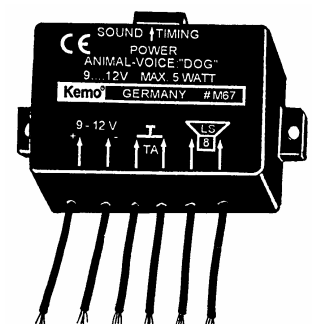
Price: 10.80 €

M067 Electronic dog barking

With adjustable sound: similar to a "small dog" up to "big angry dog"!

A battery 9...12 Volt or a stabilized power unit with an output voltage of 9 or 12 Volt (direct voltage) are connected with the module. Please use sufficiently strong batteries or a power unit respectively as the module may have a max. current consumption of up to 400 mA! (The small 9 V (006P microdyne) transistor batteries are not suitable!)

Dimensions: approx. 60 x 50 x 20 mm



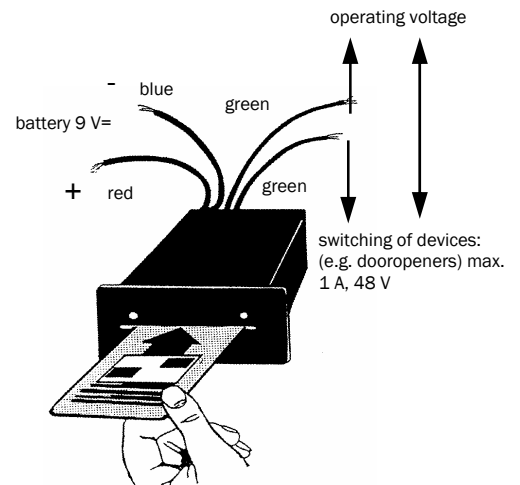
Price: 13.40 €

M068 Electronic card switch

Whenever the corresponding card has been inserted into the card slot, the card switch will switch on. The card will be read optically by 4 infra-red read-heads and will solely react on the correct card. 3 cards are enclosed, coding can be changed. Operating voltage: 9 V=. Usage: switching of devices, machines, alarm systems, dooropener, etc. which should be feasible only for a special circle of persons. The lock has an installed relay by means of which it is possible to connect loads up to 1 A, 48 V.

Technical data:

Operating voltage: 9 V=
 Output: relay contact 1 x ON, max. 1 A, 48 V
 Operating mode: optical with 4 infrared-reflex reading heads
 Card dimensions: approx. 85 x 54 mm (3 cards enclosed)
 Module dimensions: approx. 80 x 35 x 70 mm



Price: 7.80 €

M068-5 Substitutional cards for M068 electronic card switch (5 pieces)

Price: 8.10 €

M069 Electronic underground rodent pest repeller

This waterproof module emits in rapid intervals aggressive seismic oscillations, which are widely radiated underground and are mostly avoided by root voles, moles and similar rodents. The module has to be digged near the animal tunnels and is operated through a cable with operating voltage of 9 V. One module will be enough for approx. 1.000 m² of garden.

Technical data:

Operating voltage: 9 Volt=
 Input current: approx. 150 mA
 Usage: underground
 Dimensions: approx. 72 x 50 x 35 mm



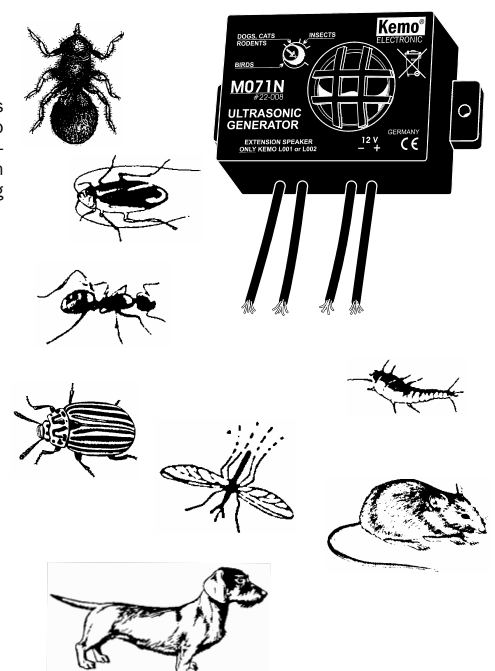
Price: 16.30 €

M071N Ultrasonic vermin repellent

This ultrasonic generator produces pulsating and aggressive ultrasonic sounds like a siren which many animals perceive as extremely unpleasant and, therefore, try to avoid as far as possible. The generator should be used to keep away rodents, insects, crawling parasites, game and birds, etc. The frequency of the generator is adjustable between approx. 8...40 kHz. A special loudspeaker with vaulted aluminium spherical membrane has been built in to achieve a better sound distribution. A stabilised power supply 12 V (< 60 mA) is necessary for setting into operation.

Technical data:

Operating voltage: 12 V (10...13.8 V) DC voltage
 Current consumption: < approx. 60 mA
 Adjustable frequency: approx. 8...40 kHz (± 15 %)
 Frequency deviation, approx. 2 x per second: approx. 2...3 kHz (automatic change of frequency, siren-like)
 Sound pressure: max. 100 dB ± 15 %
 Range: > 40 m with free field of vision
 Loudspeaker's beam angle: max. 140 degrees
 Connection of additional piezoelectric loudspeakers: max. 4 additional loudspeakers may be connected
 Please do only use the additional loudspeakers approved by Kemo: L001, L002, L003, P5123
 Functional display: blinking LED
 Connection: via free cables
 Dimensions: approx. 72 x 50 x 31 mm (without fixing straps)



Available accessories: L001, L002, L003 and P5123, see page 63

Price: 19.50 €

M073 Motorbike alarm

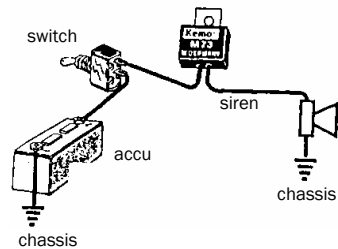
...switches automatically a horn or a siren on, if the motorbike should be moved from a parking position to any other one. A waterproof and shakeproof sealed module. Also to be used to protect any other objects, which are not to be moved.

Technical data:

Connection power: max. 1 Ampere
 Switching voltage: maximal 40 Volt
 Operating voltage: no need of own operating voltage
 Dimensions: approx. 18 x 15 x 12 mm (without fixing straps)



Example of connection:
 The shown accessories are not included!



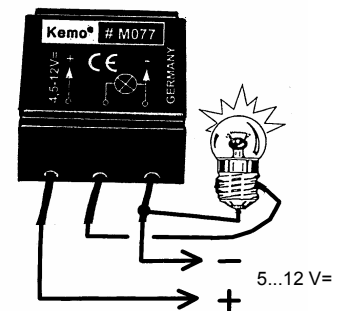
Price: 5.50 €

M077 Flasher 5...12 V=, max. 1 A

Electronic flashing device for glow lamps up to max. 1 Ampere current load. Operating voltage: 5...12 Volt DC voltage. Flashing period: approx. 2...4 Hz (approx. 120...240 flashing pulses per minute). Flashing / rest relation: approx. 50 : 50 %.

Technical data:

Operating voltage: 5...12 V= (depending on the connected lamp)
 Max. current of the lamp: 1 A
 Flash period: approx. 2...4 Hz (approx. 120...240 flash impulses per minute)
 Dimensions: approx. 25 x 22 x 17 mm



Example of connection:
 The shown accessories are not included!

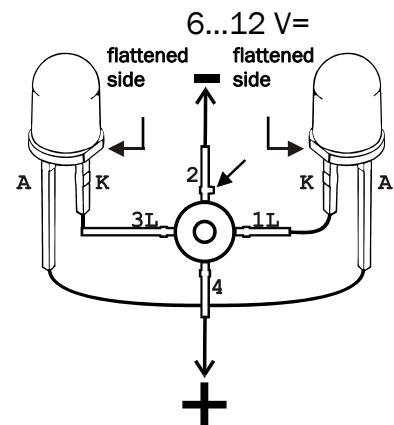
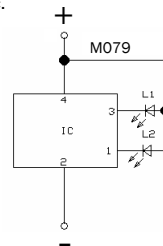
Price: 5.50 €

M079 Flasher / alternating flasher for 1 to 10 LEDs at maximum

Suitable as flasher or alternating flasher for light emitting diodes. Operating voltage: 6...12 V=. Flashing period: approx. 2...3 Hz (approx. 120...180 flash pulses per minute). Protection against change of polarity, short-circuit-safe, built-in current limitation for LED's. Connecting possibilities for 1...10 LED's. Ideal for use in model construction, for adornment picture or caps with built-in LED's, warning flashers, etc.

Technical data:

Operating voltage: 6...12 Volt=
 Output: 2 (alternating flasher)
 Flash sequence: approx. 2...3 Hz (approx. 120...180 flashing pulses per minute)
 Flashing / rest relation: approx. 50 : 50 %
 Dimensions: approx. 18 x 16 x 4 mm



Price: 3.70 €

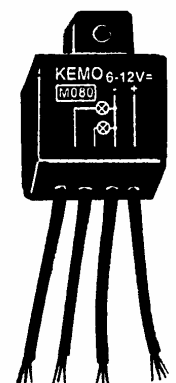
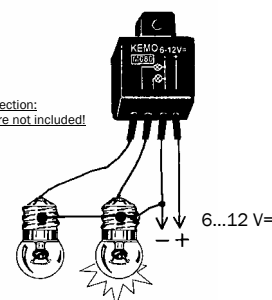
M080 Flasher / alternating flasher for small glow lamps 6...12 V=

It is possible to connect small glow lamps up to a max. current load of 300 mA. Flashing frequency: approx. 2...3 Hz (approx. 120...180 flashing pulses per minute). Suitable as flasher or alternating flasher.

Technical data:

Operating voltage: 6...12 Volt=
 Operating mode: flasher or alternating flasher
 Output: 2 outputs each for max. 300 mA
 Flash sequence: approx. 2...3 Hz (120...180 x per minute)
 Flashing / rest relation: approx. 50 : 50 %
 Dimensions: approx. 18 x 15 x 12 mm (without fixing straps)

Example of connection:
 The shown accessories are not included!



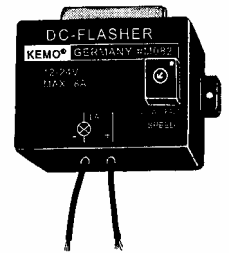
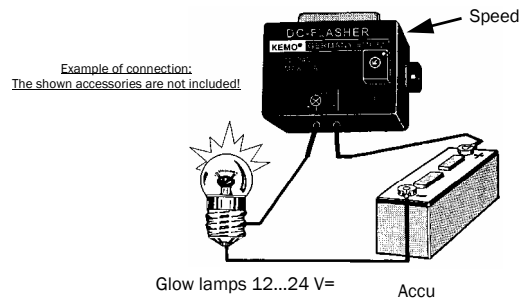
Price: 5.50 €

M082 DC Flasher 12...24 V=, max. 8 A

Power flasher for glow lamps 12...24 V=, maximum 8 A switching capacity. Simple 2-wire-connection. For direct current (accu or power supply). Flashing sequences: approx. 12...50 times per minute adjustable.

Technical data:

Operating voltage: 12...24 Volt=
 Switching voltage: max. 8 A
 Flash sequence: approx. 12...50 times x per minute
 Connection: over 2 cables
 Dimensions: approx. 71 x 55 x 28 mm



Price: 11.80 €

M083 Accu-charging regulator 12 V=

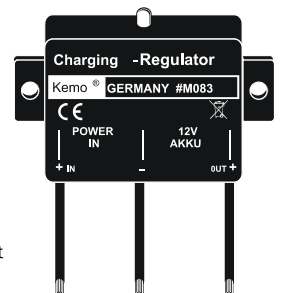
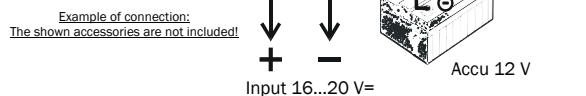
This module supervises the charging state of a 12 V car accu and starts charging automatically, whenever there is a drop of voltage. With full accu the module will switch off and supervise the accu. Suitable for accu placed in alarm systems, weekend-houses, caravans etc. in order to keep accu constantly charged without the risk of overcharging. Also suitable as charging regulator for solar surfaces. Charging current maximum 1,5 A.

Short circuit and reverse current proof.

Automatic charging interruption with accu voltage of approx. 13,8...14,2 V.

Technical data:

Input voltage: 16...20 V= (solar panel or power supply)
 Output: regulated for charging a 12 V accumulator to max. 13,8...14,2 V
 Output current: 0...1,5 A depending on the charging state of the accumulator
 Dimensions: approx. 60 x 45 x 20 mm (without fixing straps)



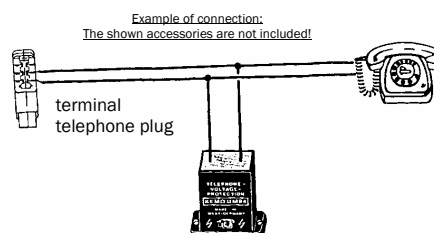
Price: 10.80 €

M084 Telephone voltage protection

This module has to be connected parallel to the telephone leads. It is an efficient protection for you and for your valuable telephone unit against overvoltages as happening during lightnings, static chargings, too high external voltages from the neighbourhood, etc. which may penetrate your telephone socket. It is possible that high voltages of more than (>) approx. 120 V are deflected. Impulse circuit capacity up to 40 Ampere! This module has no Postal permission and should be used exclusively like a great deal of other telephone accessories within private telephone units without public exchange connection.

Technical data:

Connection: 2 leads, parallel to the phone leads
 Shunt conductance: > approx. 120 V
 Impuls current-carrying capacity: max. 40 A / 0,5 seconds
 Dimensions: approx. 47 x 45 x 22 mm



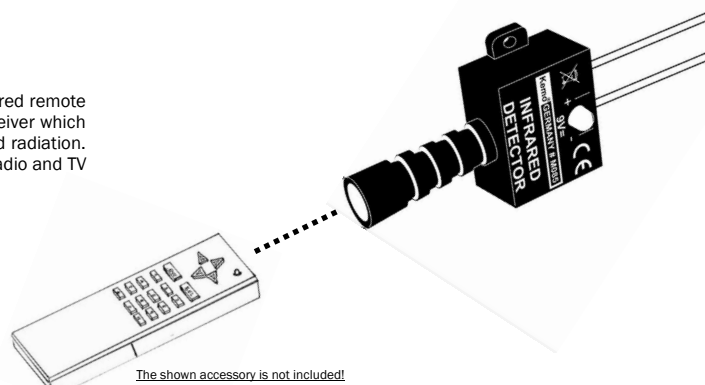
Price: 5.50 €

M085 Infrared detector

With the aid of this "Infrared Detector" it is made possible to carry out functional tests with infrared remote controls units, infrared transmitters in light barriers, etc. This module consists of an infrared receiver which indicates through switching on a light emitting diode, if the remote control on test emits infrared radiation. Suitable for most of the remote controls and transmitters. An indispensable test equipment for radio and TV workshops and also for hobbyists.

Technical data:

Operating voltage: 9 V=
 Current consumption: < 8 mA
 Sensitivity: the whole light spectrum from visible light to infrared
 Display: via a light-emitting diode
 Dimensions: approx. 30 x 59 x 20 mm (without fastening straps, with light tube)



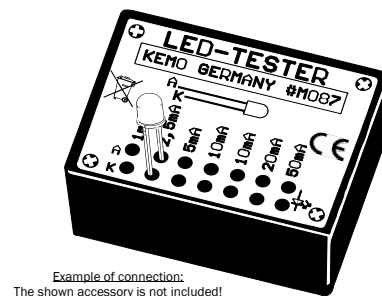
Price: 5.80 €

M087 LED tester

With the aid of this test module it is made possible to carry out tests with all kinds of light emitting diodes in order to check function, brightness, colour and polarity. The LED's could be tested optionally with following currents: approx. 1 mA, 2,5 mA, 5 mA, 10 mA, 20 mA and 50 mA. It is feasible to insert into the test contacts brand-new LED's as well as soldered out LED's with residual soldering tin at the connecting pins. In order to facilitate selection of LED's of equal brightness, there have been placed two test sockets with the same currents (10 mA) side by side. Necessary: battery 9 V.

Technical data:

Operating voltage: 9 V battery
 LED-connection: contact eyes
 LED-testing currents: optional 1, 2,5, 5, 10, 20, 50 mA
 Dimensions: approx. 58 x 44 x 25 mm



Example of connection:
 The shown accessory is not included!

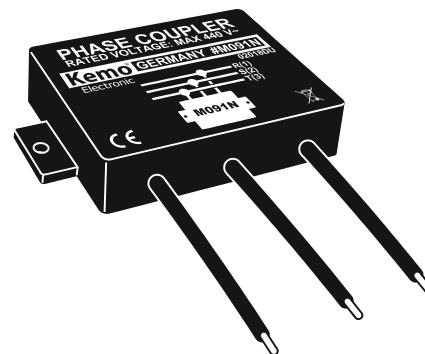
Price: 7.80 €

M091N Phase Coupler for Power Line Products

Connects capacitively all 3 in-house mains phases with each other so that transfer rates of up to 200 Mbit via the mains supply can be reached for the internet and computer networking (depending on the nature of the mains supply). If the signal is fed into 1 phase only, the phase coupler connects all 3 phases with each other so that these become permeable to the power line signal and the internet or computer signal will also be available at all other sockets of the in-house network. Also suitable for wireless intercoms! A considerable increase of the range and transmission quality may be achieved!

Technical data:

For electric circuits 110 V...440 V AC
 3-phase version 0.5...100 MHz
 For power line products 10...200 Mbit
 Measures: approx. 72 x 50 x 28 mm (without fixing straps)
 To be installed by an electrical expert only!!



Price: 14,90 €

M094 Marten-repeller 12...15 V=

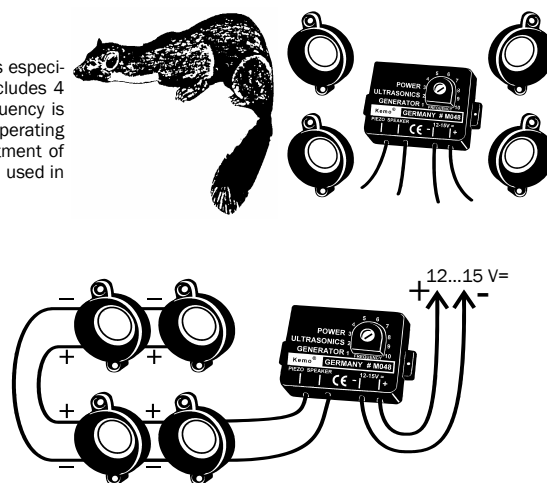
...produces intensively pulsating ultrasonic sounds which are found by martens and similar rodents especially unbearable, and therefore is capable to scare away these animals. This "Marten Repeller" includes 4 small ultrasonic loudspeakers to achieve a profitable radiation of the ultrasonic sound. The frequency is adjustable (approx. 10...40 kHz, $\pm 20\%$). Indication of operation through light emitting diode. Operating voltage: 12...15 V=. Usage: This module is able to scare away martens from the engine compartment of cars and lorries, place where these animals use to gnaw at cables and other plastic parts! Or to be used in pantries, in the cellar or attic!

Technical data:

Operating voltage: 12...15 V=
 Current consumption: at 12 V < 0,05 A
 Loudspeaker output: only for piezo loudspeakers
 Audio frequency: adjustable approx. 10...40 kHz ($\pm 20\%$)
 Dimensions piezo loudspeaker: approx. $\varnothing 30$ mm x 13 mm
 Dimensions: approx. 60 x 45 x 23 mm (without fixing straps)

Available accessories: L001, L002 and P5123, see page 63

Price: 18.90 €



M100N Anti marten devices for motor vehicles

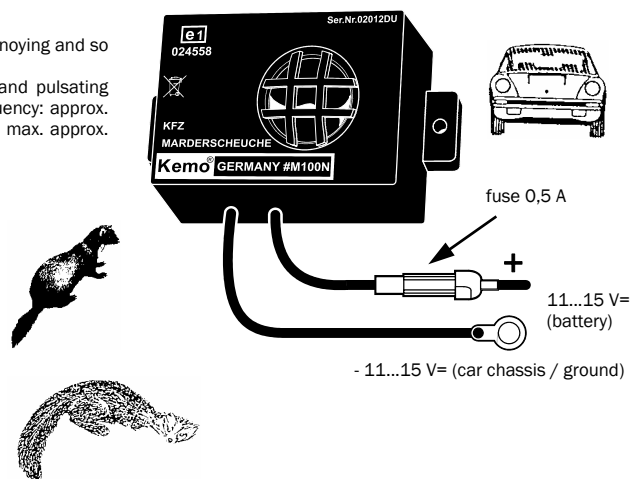
...produces aggressive ultrasonic sounds not audible to men which martens find extremely annoying and so try to avoid them, if possible. To be mounted in the engine compartment of motor vehicles. Ultrasonic marten repellent for use in cars, houses and lofts. Produces enormously loud and pulsating ultrasonic sounds. Operating voltage: 11...15 V=, average power consumption < 2 mA, frequency: approx. 23 kHz. Angle of radiation with a special spherical surface tweeter with about 140 degrees, max. approx. 100 dB $\pm 20\%$.

Technical data:

Operating voltage: 11...15 V=
 Power consumption: < 2 mA
 Frequency: approx. 23 kHz
 Angle of radiation: about 140 degrees
 Power of radiation: max. approx. 100 dB $\pm 20\%$
 Dimensions: approx. 72 x 50 x 28 mm (without fixing straps)

Available accessory, page 37: M020 Voltage transformer from 24 V= to approx. 13,8 V=, (for 12 V-devices), max. 1,1 A

Price: 16.30 €



M101 Descaler with power supply

Magnetic field generator for sanitary conduits. 230V~

Produces magnetic alternating fields, which charge the trace elements such as lime, metal oxides, etc. contained in water positively molecular. So it can be prevented that these cannot dock to molecules that are also charged positively (e.g. pipes). Thus the deposit of lime, minerals, etc. in pipes, valves, etc. is made difficult or prevented, respectively. Operating voltage: 230V~ with firmly connected plug power supply.

Technical data:

Operating voltage: ca. 230V~ (firmly connected plug power supply)

Current consumption: < 2,5W

Operating frequency: < 2000Hz

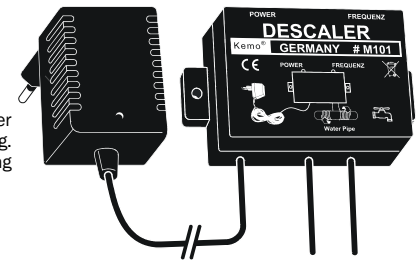
For water pipes made of copper, plastic, steel, approx. Ø 8...80mm

Capacity: max. approx. 5 m³ / h

The coil on the water pipe must be wound in opposite directions!!

Dimensions: approx. 72 x 50 x 28mm, without mounting straps

Plug power supply is included!



Only for indoor use!

Price: 19,80 €

M101A Descaler

Magnetic field generator for sanitary conduits

Produces magnetic alternating fields, which charge the trace elements such as lime, metal oxides, etc. contained in water positively molecular. So it can be prevented that these cannot dock to molecules that are also charged positively (e.g. pipes). Thus the deposit of lime, minerals, etc. in pipes, valves, etc. is made difficult or prevented, respectively. Required plug power supply: 6...15V= with jack plug 3.5mm, < 130mA (not enclosed).

Technical data:

Operating voltage: 6...15V=

Current consumption: approx. < 130mA

Operating frequency: < 2000Hz

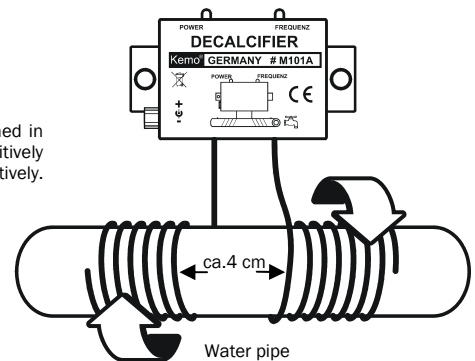
For water pipes made of copper, plastic, steel, approx. Ø 8...80mm

Capacity: max. approx. 5 m³ / h

The coil on the water pipe must be wound in opposite directions!!

Dimensions: approx. 72 x 50 x 28mm, without mounting straps

Plug power supply is not included!



Example of connection:
The shown accessories are not included!

Price: 8.10 €

M102N Second accumulator charger 6...24 V=

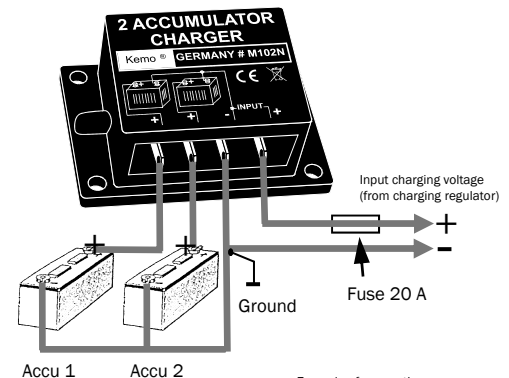
For lead accumulators 6 to 24 V. With this accumulator separating filter 2 accumulators are charged separately at one source of charging current (vehicle generator, solar systems, windmills, chargers etc). For charging currents up to 10 A at maximum (with cooling 20 A). The charging current distributes in such a manner that an empty accumulator will be charged more than an accumulator that is almost charged. It is perfect for motor caravans if one accumulator operates the television, radio etc. and the second accumulator must remain charged in order to start the motor. Or for weekend cottages if one accumulator used for the alarm system must not be emptied.

Technical data:

Accumulators to be connected: 2 each of the same voltage 6...24 V=

Max. charging current: 10 A (with cooling max. 20 A (total current))

Dimensions: approx. 84 x 58 x 33 mm



Example of connection:
The shown accessories are not included!

Price: 10.80 €

M103 Master-slave 230 V~

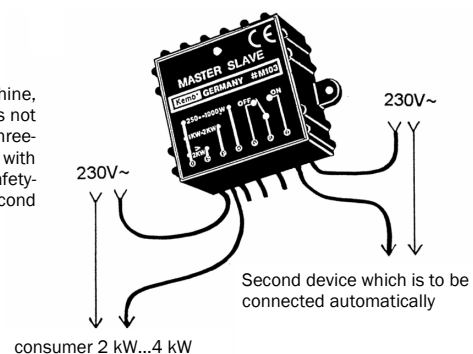
...connects or disconnects automatically another load with a potential-free contact upon starting a machine, lamp etc. The module is simply looped in a lead of the electric mains of the machine. Consequently, it is not necessary to intervene in the machine. Suitable for consumers of 230 V alternating voltage or 410 V three-phase current. For consumers 250...4000 W. The switching contact (1 x switch over) may be loaded with max. 10 A. Use: Automatic connection of a vacuum cleaner when switching on a machine, automatic safety-cutoff when starting another machine, delayed (approx. 0.5 sec.) automatic connection of a second machine if the house fuse blows in case of simultaneous connection.

Technical data:

Voltage: 230 V~/410 V AC

Contact: 1 x switch over, max. 10 A

Dimensions: approx. 65 x 67 x 37 mm



Price: 16.30 €

Kits and modules for computers

With the modules M104 to M110, M117 and the kit B210 "Relay Card" and B240 "Computer Laser Show" we have developed a series of interesting kits and modules which can be operated at normal standard AT-computers. The kits and modules can be operated at all kinds of PCs from type '286 till the Pentium computer. Each kit or module includes the software in form of a 3,5" diskette. The printer connection at the PC "LPT1" or "LPT2" serves as interface between the computer and the module or the kit. You may for example control d.c. motors (M107) or stepper motors (M106, M109) with these modules. It is possible to control up to 4 motors with the computer program and so you may for example program the motions of a robot. Or you may program the trains of your model railway. You may also program the water pumps of a fountain in such a manner that the water fountains rise to the rhythm of the music.

M104 4-Channel computer switch

...for switching up to 4 different appliances, lamps or motors by means of a computer program. Consumers with operating voltages of 6...24 V=, max. 2 A direct current can be controlled. By means of the enclosed software it is possible to switch on and off appliances at certain times, specific switching sequences (also for several days) can be programmed, running light effects etc.! Connect the module at the printer port of a standard PC. A floppy disk containing an MS-DOS and WINDOWS program, respectively, is enclosed.

Technical data:

Connection: at the printer port of the computer at the LPT1 port with built-in 25-pole SB-D plug

Switching outputs: via a built-in 25-pole SUB-D socket board

Channels: 4

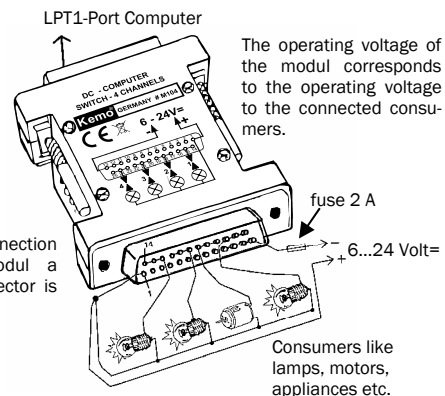
Loading capacity per channel: 6...24 V= max. 2 A total current connected simultaneously

Triggering: via the enclosed PC software MS-DOS or WIN XX or XP. The extensive software allows many different triggerings, triggering programs that can be saved, switch clock functions, etc.

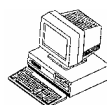
Display: indication of the switching condition via 4 built-in LEDs

Separation PC / load: via 4 optocouplers

Dimensions: approx. 73 x 56 x 30 mm



Price: 27.50 €



M106 Stepper motor-interface 4 pin

...for controlling a 4-lane step motor (bipolar) 3...17 V, max. 2 A. A double power pack (split power supply) is required for the current supply. For connection to a standard AT-PC from type '486 on. The motor may either be controlled by hand with the computer keyboard or via a program with an automatic program flow which has been written before. By means of an interface switch (M108) it is possible to operate up to 4 step motors at the same time via individual step motor interfaces respectively. Software DOS + Windows (98, NT, 2000, XP) (diskette 3,5" is enclosed).

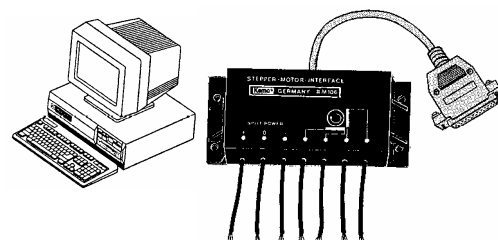
Technical data:

Operating voltage: 4...18 V split power supply. Double DC voltage, dependent on the connected motor (always 1 V more than the motor requires)

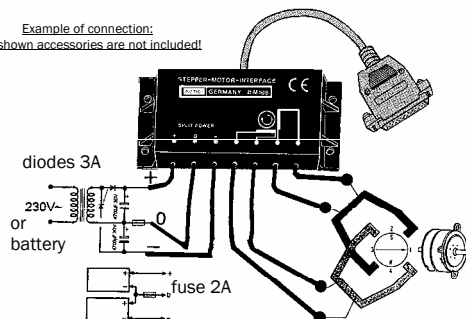
Motor connection: 1 bipolar stepper motor 4 connections 3...17 V max. 2 A

Connector: 25 poles for connection to the PC printer port LPT1

Dimensions: approx. 120 x 50 x 24 mm



Example of connection:
The shown accessories are not included!



Disc 3,5" is enclosed!

Fitting 4-fold interface switch: M108, see page 50

Available accessories (see page 51):

P5108 Stepper motor „Berger RDM57“

P5110 Mini-stepper motor „RDM37“

P5111 Stepper motor „AEG S026/48-4 pin“

P5111-15 Stepper motor „AEG S026/48-4 pin“

P5113 Mini-stepper motor "Siemens 1BC 2720-68N"

P5337 Mini-stepper motor „AEG S021/24“

P5341 Micro-stepper motor, oval mounting plate

P5342 Micro-stepper motor, rectangular mounting plate

Price: 27.50 €

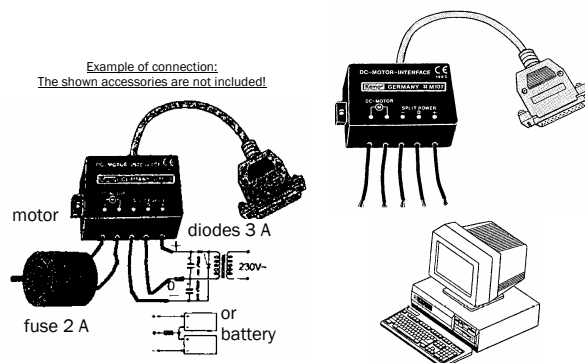


M107 DC-motor-interface

...for controlling a direct-voltage motor (DC battery motor with brushes at the collector) 5...24 V, max. 2 A. A double power pack (split power supply) is required for the current supply. For connection to a standard AT-PC from type '286 on. The motor may either be controlled by hand with the computer keyboard (number of revolutions, running direction) or via a program with an automatic program flow which has been written before. By means of an interface switch (M108) it is possible to operate up to 4 motors at the same time via individual interface modules respectively. Thus complex motions at robots, model railroads etc. can be programmed. Dimensions: approx. 60 x 45 x 21 mm

Disc 3,5" is enclosed!

Fitting 4-fold interface switch: M108, see page 50

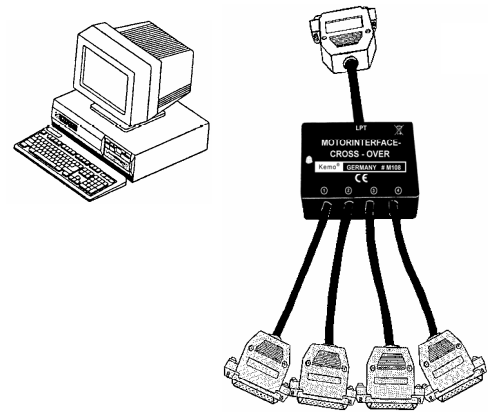


Price: 21.60 €



M108 4-fold Interface switch

By means of this interface switch one may operate 2, 3 or 4 motor interface modules with one motor each at one computer simultaneously. Thus it is possible to operate up to 4 motors at the same time and to programme complex motions, e.g. for robots, machines, model railroads etc.
 Dimensions: approx. 72 x 50 x 22 mm

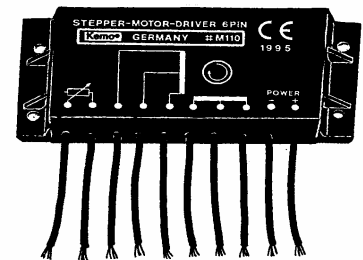


This interface switch is suitable for our motor interface modules:
 M106, M107 + M109, see pages 49 + 50

Price: 21.60 €

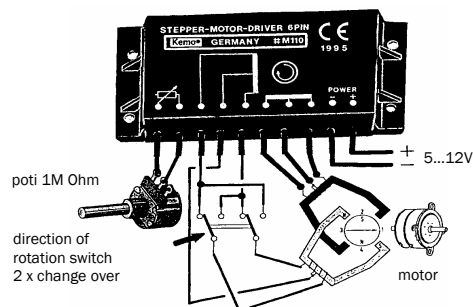
M110 Stepper motor-driver 6 pin

A stepper motor (unipolar) with 6 connections can be operated at this module. It is possible to change the direction of rotation of the motor. The number of revolutions of the motor can also be adjusted from approx. 2...1000 Hz (impulse sequence). For motors from 5...12 volt, max. 2 A. The operating voltage of the module depends on the operating voltage of the motor (5...12 volt). Furthermore a potentiometer 1 M linear and a switch 2 x change over are necessary for operation. These parts are not included. The module works without computer and can only control the direction of rotation and the number of revolutions of the motor. A controlled program flow is not possible!
 Dimensions: approx. 120 x 50 x 24 mm



Example of connection:
 The shown accessories are not included!

Available stepper motor (see page 51):
 P5339 Mini-stepper motor "42SPM-24DJA"



Price: 27.50 €

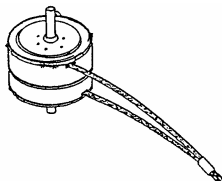
P5108 Stepper motor "Berger RDM57"



Approx. 24 steps / rotation, bipolar, 4 connections, approx. 30 Ohm per winding. Operating voltage approx. 10 V / 345 mA. Dimensions without axis Ø approx. 57 x 26 mm, axis Ø approx. 5 x 7 mm.

Price: **4.90 €**

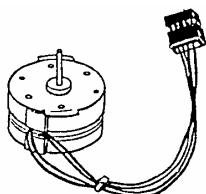
P5337 Mini-stepper motor "AEG S021/24"



Approx. 24 steps / rotation, bipolar, 4 connections, approx. 8 Ohm per winding. Operating voltage approx. 5 V / 0,625 A. Dimensions without axis Ø approx. 35 x 25 mm, axis Ø approx. 1 x 10 mm.

Price: **3.80 €**

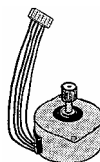
P5110 Mini-stepper motor "RDM37"



Approx. 40 steps / rotation, bipolar, 4 connections, approx. 30 Ohm per winding. Operating voltage: approx. 7,5 V / 0,25 A. Dimensions without axis Ø approx. 35 x 22 mm, axis Ø 1 x 10 mm.

Price: **3.80 €**

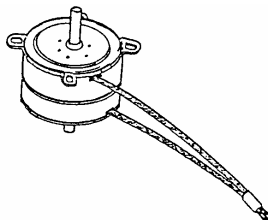
P5339 Mini-stepper motor "42 SPM-24 DJA"



Approx. 48 steps / rotation, unipolar, 5 connections, approx. 85 Ohm per winding. Operating voltage approx. 24 V / 282 mA. Dimensions without axis Ø approx. 45 x 23 mm, axis Ø approx. 2 x 15 mm.

Price: **4.40 €**

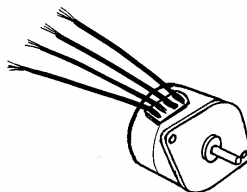
P5111 Stepper motor "AEG S026/48-4 pin"



Approx. 48 steps / rotation, bipolar, 4 connections, approx. 5 Ohm per winding. Operating voltage approx. 5 V / 1 A. Dimensions without axis Ø approx. 66 x 37 mm, axis Ø approx. 5 x 11 mm.

Price: **3.80 €**

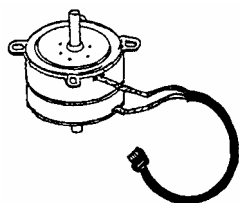
P5341 Micro-stepper motor, oval mounting plate



Approx. 20 steps / revolution, bipolar, 4 connections, approx. 15 Ohm per winding. Operating voltage 3...4,5 V, approx. 300 mA. Dimensions (without axle) approx. 20 x 15 mm Ø, axle approx. 1,5 x 4 mm.

Price: **3.80 €**

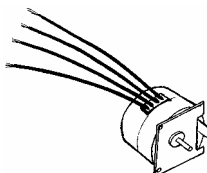
P5111-15 Stepper motor "AEG S026/48-4 pin"



Approx. 48 steps / rotation, bipolar, 4 connections, approx. 15 Ohm per winding. Operating voltage approx. 10 V / 0,65 A. Dimensions without axis Ø approx. 66 x 37 mm, axis Ø approx. 5 x 11 mm.

Price: **3.80 €**

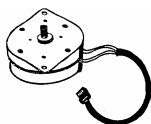
P5342 Micro-stepper motor, rectangular mounting plate



Approx. 20 steps / revolution, bipolar, 4 connections, approx. 15 Ohm per winding. Operating voltage 3...4,5 V, approx. 300 mA. Dimensions (without axle) approx. 20 x 15 mm Ø, axle approx. 1,5 x 4 mm.

Price: **3.80 €**

P5113 Mini-stepper motor "Siemens 1BC 2720-68N"



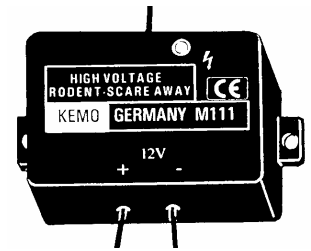
Approx. 24 steps / rotation, bipolar, 4 connections, approx. 8 Ohm per winding. Operating voltage approx. 5 V / 0,5 A. Dimensions without axis Ø approx. 57 x 26 mm, axis Ø approx. 4 x 9 mm.

Price: **4.90 €**

M111 Marten shock for motor vehicles

Chases away rodents through high-voltage shocks!
(Electric fence principle)

Operating voltage: 12 V car battery (< 2 watt). Output voltage: approx. 400...700 V. By means of this you may "charge" contact plates, metal grids, etc. in the engine compartment which have been fixed insulated. Upon contact the marten gets an electric shock and runs away. (It will not be killed).
 Dimensions: approx. 70 x 44 x 20 mm



Price: 13.40 €

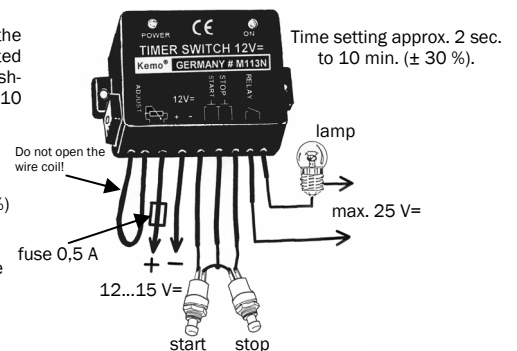
M113N Time switch 12...15 V=, approx. 2 sec. up to 10 (~30) min.

...switches other devices on after pressing the key and switches them off again automatically by means of the installed relay point 1 x ON (max. 3 A) when the adjusted time has expired. The lapse of time may be interrupted any time with the second key. Use: exposure devices, charging sets, toys, machines, illumination, etc. 2 push-buttons foremare required in addition for operation as well as a potentiometer 500 k lin. for periods exceeding 10 minutes.

Technical data:

Operating voltage: 12...15 V=
 Current consumption: approx. 20 mA / 80 mA (relay off / on)
 Adjustable time: approx. 2 sec. to 10 min., with an external potentiometer 500 k lin. up to ~ 30 minutes (± 30 %)
 Connection: via cable outlets at the module
 Displays: 2 (1 x LED operating voltage, 1 x LED relay "ON")
 Relay point: 1 x ON, max. 3 A max 25 V (The installed relay point may also switch up to 230 V~, but in this case the safety regulations of VDE like protection against accidental contact, etc. have to be observed)
 Dimensions: approx. 60 x 45 x 20 mm

Example of connection:
 The shown accessories are not included!



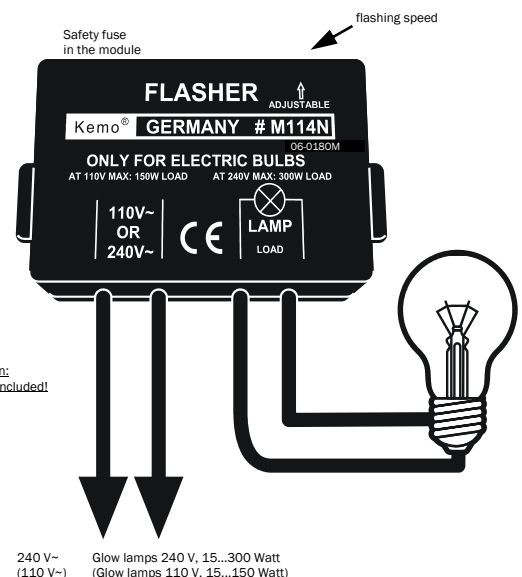
Price: 10.80 €

M114N Flasher, slow 240 V~ / 110 V~

Flasher with adjustable flash period: approx. 0.6...9 seconds turn-on time. Turn-off time approx. 50 % of the turn-on time, respectively. Built-in fuse: T 1,6 A. For electric light bulbs 15...300 Watt, 240 V~ (15...150 W at 110 V~). Use: billboards, model lighthouse etc.

Technical data:

Operating voltage: 110...240 V AC
 Rupturing capacity: for electric light bulbs 110 V up to max. 150 W at 110 V~ operating voltage, or for electric light bulbs 240 V max. 300 W at 240 V~ operating voltage
 Minimum load: 15 W
 Safety fuse: installed 1.6 A delay-action
 Flash period: approx. 0.6...9 seconds on-transition time (adjustable), disconnecting time approx. 50 % of the on-transition time
 Dimensions: approx. 72 x 50 x 41 mm



Example of connection:
 The shown accessory is not included!

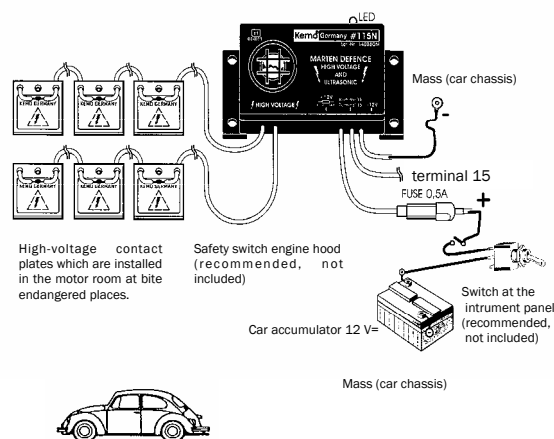
Price: 13.40 €

M115N Marten defence for motor vehicles 12 V=

...chases away martens by means of small high-voltage plates charged electrically to approx. 200...300 V= through electric shock in the engine compartment of the vehicle (only weak current pulses that chase the marten away, but do not kill it) and through strong, aggressively pulsating ultrasonic sounds. Extremely low power consumption (< 0,005 A), switches the battery voltage of < 11.5 V automatically off (does not discharge the battery completely, if vehicles are being parked for quite some time).

Technical data:

Operating voltage: 12...15 V= (car battery)
 Average power consumption: < 5 mA
 Automatic shutoff: if the battery voltage decreases to < 11.5 V (± 5 %)
 Output voltage: approx. 200...300 V =
 Ultrasonic frequency: approx. 22 kHz ± 10 %
 Acoustic pressure: max. approx. 100 dB ± 15 %
 Angle of radiation ultrasonics: approx. 150 degree
 Loudspeaker: special ceramic piezoelectric loudspeaker with spherical membrane of aluminium
 Temperature range: approx. - 40...+ 80 degree C
 Functional display: flashing LED (approx. every 5...12 sec.)
 Cable length high-voltage cable: 2 x approx. 1.9 m (± 10 %)
 Fuse in the fuse holder: 500 mA
 High-voltage contact plates: 6 pieces, approx. 40 x 40 x 1.5 mm each
 Dimensions basic instrument: approx. 46 x 73 x 145 mm (H x W x D)



Example of connection:
 The shown accessories are not included!

Price: 52.50 €

M116 Infrared light barrier approx. 30 m

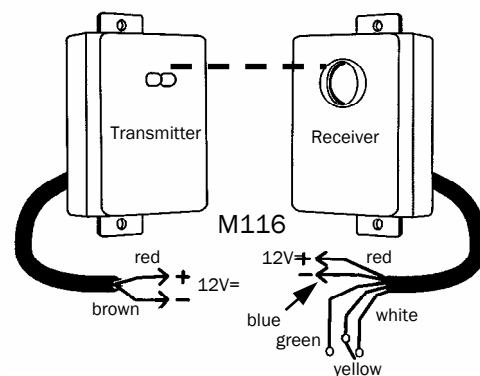
The light barrier works with infrared light rays invisible to man. Range (maximum distance between transmitter and receiver): approx. 30 meters. If the light ray is interrupted, a relay switches on (1 x switch-over, max. load 1 A).

Technical data:

Operating voltage transmitter: 12 V=, approx. 10 mA
 Operating voltage receiver: 12 V=, approx. 10...50 mA
 Breaking capacity relay: max. 1 A / 24 V
 Range: max. 30 m
 Dimensions transmitter: approx. 73 x 50 x 27 mm
 Dimensions receiver: approx. 73 x 50 x 27 mm

Recommended tilted mirror if the infrared ray shall be deviated.

K002 Reflector mirror, see page 70



Price: 37.90 €

M117 Alarm module for computers alarm for house and home, for connection to a computer

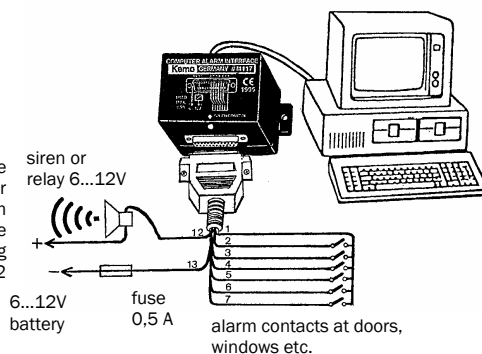


This module is to be connected with a PC, from 286 on. 6 alarm circles can be connected. By means of the enclosed software, the alarm circles may be activated individually at different times. The time of alarm, number of contact operates for triggering alarm etc. may be adjusted or counted individually. The time of the alarm release and of the alarm circle is indicated. It is possible to connect working or rest contacts. Installed pulse amplifier for up to 100 m long cables towards the alarm contact. Excellent automatic unwanted signal blanking against perturbing radiation. Alarm output via a switching transistor for direct triggering of a relay or siren 6...12 V, max. 0,5 A.

Dimensions: approx. 70 x 55 x 35 mm

Floppy disc 3,5" is enclosed.

Alarm contacts: A002, A003 and A004 page 71

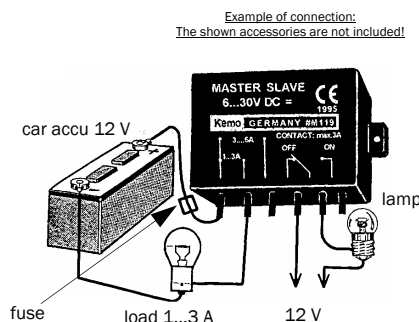


Example of connection:
 The shown accessories are not included!

Price: 47.50 €

M119 Master-slave 6...30 V DC

"Current conduction switch", connects or disconnects automatically another device when starting a direct-current device. For example, the radio is disconnected automatically when switching on the CB-radio equipment in the car. Or the amplifier of the radio equipment is connected automatically when the CB-radio transmits. Or the outdoor illumination of a motor caravan is disconnected automatically when switching on the indoor lighting. May also be used for controlling whether lamps at a vehicle light (control of current conduction). The module simply has to be connected in series with the power lead of the device (6...30 V=) and connects and disconnects other devices via a potential-free contact (1 x change over, max. 3 A). The module reacts on currents between approx. 1...5 A. Internal resistance: approx. 0,12 Ohm (currents 1...3 A) or 0,05 Ohm (currents 3...5 A). Dimensions: approx. 60 x 45 x 20 mm

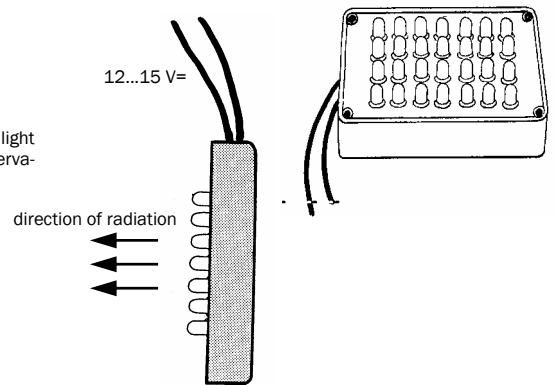


Example of connection:
 The shown accessories are not included!

Price: 5.80 €

M120 Infrared spotlight 12...15 V= for CCD-cameras

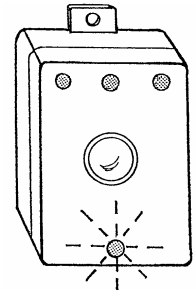
With the infrared spotlight CCD-cameras may recognize objects also in complete darkness. The infrared light is invisible for men, CCD-cameras can see well with an infrared spotlight. Perfect for inconspicuous observation of entrances, drives etc. Operating voltage: 12...15 V=, < 300 mA. Range: max. 5 m.
Dimensions: approx. 71 x 49 x 18 mm



Price: 17.80 €

M121 CCD-camera-dummy

CCD-camera "dummy" with lens system and 3 infrared spotlight LED dummies. A red LED operating indication is installed. 2 x round cells UM3 are necessary for operation. This camera dummy shall fake a real monitoring camera and thus it shall prevent shoplifting, attacks etc.
Dimensions: approx. 90 x 50 x 33 mm



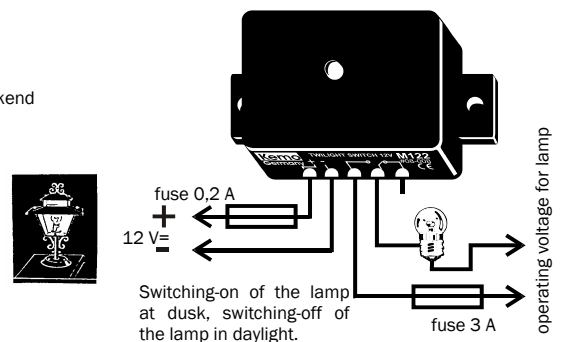
Price: 8.10 €

M122 Twilight switch 12 V=

...switches on e.g. lamps at nightfall and off again at daybreak. Operating voltage 12 V= (for weekend cottages, sailing yachts, caravans etc.). Distribution output: relay 1 x change over, max. 3 A.

Technical data:

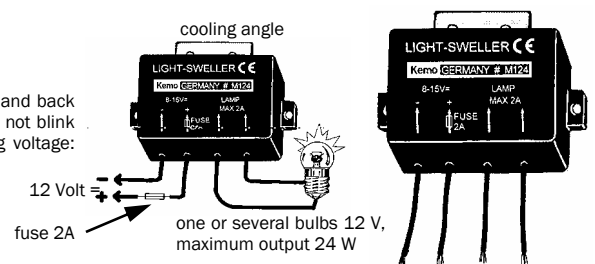
Operating voltage: 12 V DC voltage (11...14 V)
Power consumption: approx. 2 mA / 35 mA (relay on / off)
Relay contact: 1 x switch-over, loading capacity max. 25 V 3 A
Operating temperature range: approx. - 15...+ 50 degree C
Luminous intensity switching-on: approx. 25 lux ± 20 %
Luminous intensity switching-off: approx. 45 lux ± 20 %
Switching delay: approx. 3...4 seconds
The sensitivity of the luminous intensity may be changed by partially covering the sensor mechanically.
Dimensions: approx. 72 x 50 x 32 mm (without fixing straps)



Price: 9.80 €

M124 Light sweller 12 V=, max. 24 W

This light sweller regulates incandescent lamps (halogen lamps, too) slowly from "dark" to "light" and back again in continuously recurring succession. (Like a flasher, apart from the fact that the lamps do not blink but slowly become light and dark again). Swelling sequence: approx. every 5...8 sec. Operating voltage: 8...15 V=, max. lamp load: 2 A.
Dimensions: approx. 60 x 45 x 20 mm

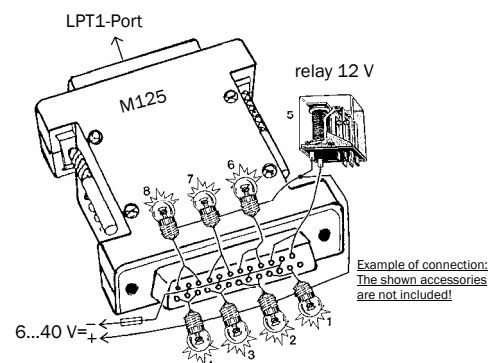


Price: 16.30 €

Example of connection:
The shown accessories are not included!

M125 Relay module 8-channel for PC's from 486 upwards

Relay module for switching up to 8 different appliances, lamps or motors according to a computer program (software is enclosed). The installed solid-state-relays may switch voltages up to 40 V and loads up to 0,4 A (DC) or 0,2 A (AC). Higher loads must be switched via auxiliary relays. The module is operated at the printer port LPT1. Scope of delivery M125: 1 relay module M125 / 1 software disc "8 channel computer switch".
Dimensions: approx. 73 x 56 x 29 mm



Example of connection:
The shown accessories are not included!

Example for switching 7 incandescent lamp-channels and 1 relay for switching higher loads

Price: 19.80 €

M126N Electronic key 12 V=

When holding the enclosed transponder key pendant in front of the module (distance approx. 3...6 mm), a relay switches on. Application: Contactless door opener to switch appliances etc. The module may also be hidden behind nameplates, too. Operating voltage: 12 V= 0,03 A. The key does not need a battery! Substitute transponder keys may be ordered under order no. M131N. All keys lock in the same manner (cannot be programmed individually).

Technical data:

Operating voltage: 12 V= stabilizsd

Current consumption: < 30 mA

Transponder frequency: approx 128 kHz

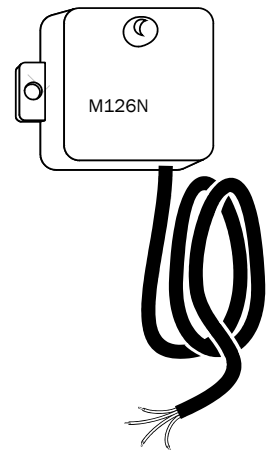
Switching distance: in case of Kemo transponder key M131N, in case of mini-transponder key E55XX or TK55XX approx. 2 mm

Relay contact: 1 x ON max. 25 V, 0,2 A AC or DC (solid-state-relay R-on: max. 12 Ohm)

Turn-on pulse length: approx. 2 sec. (after removing the transponder key the relay remains switched on for 2 sec.)

Operating temperature range: approx. - 20...+ 40 degree C

Dimensions of the module: approx. 40 x 40 x 12 mm (without fastening straps)

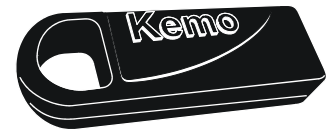


Available accessories: M131N, E55XX + TK55XX

Price: 15.80 €

M131N Electronic spare key ring for M126N + B231

Electronic spare key ring for the modul M126N + B231. No battery necessary!
Dimensions: approx. 30 x 10 x 6 mm



Price: 3.80 €

E55XX Transponder key - GLAS -

Substitute transponder key for the electronic lock "Kemo no. M126N", frequency: approx. 125...128 kHz, switching distance: approx. 1...2 mm. Hold the black tip of the glass tube in the centre of the switching surface of the switching module M126N to trigger switching.
Dimensions: approx. Ø 2 x 12 mm



Price: 5.50 €

TK55XX Transponder key - PLAST -

Substitute transponder key for the electronic lock "Kemo no. M126N", frequency: approx. 125...128 kHz, switching distance: approx. 2...5 mm. Please hold the black tip of the plastic part in the centre of the switching surface of the switching module M126N to trigger switching.
Dimensions: approx. 12 x 6 x 3 mm



Price: 5.50 €

M128 HF-Detector (Mini Spy Finder)

By means of this searching device bugging devices which are active in the room, computer or telephone can be located. Thus it is possible to find hidden bugging devices (bugs, mini spys). The device responds to bugging devices with transmitting frequencies of 100 kHz...2.4 GHz with transmitter powers usual for bugs. Display: 1 x LED for the turn-on control, 1 LED for indication of receipt from one transmitter (the closer you get to the transmitter, the faster this LED flashes). A 9V compound battery is necessary for operation.

Technical data:

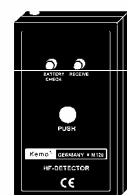
Operating voltage: 9 V compound battery

Current consumption: < 10 mA

Reception frequency: approx. 0,1 MHz ... 2,4 GHz

Display: light-emitting diode display

Dimensions: approx. 102 x 61 x 26 mm (without antenna)



Price: 27.50 €

M135 Light barrier 4 m

Ready assembled infrared light barrier with transmitter and receiver. Range: more than 4 metres. If the infrared light ray is interrupted (if a person walks through), a relay switches for approx. 0.5...7 seconds (adjustable). Thus it is possible to switch on a bell, counter or lamp or the like for this period. Operating voltage: 12 V= relay point 1 x ON max. 3 A 25 V.

Technical data:

Operating voltage: 12 V=

Relaycontact: 1 x ON max. 3 A 25 V

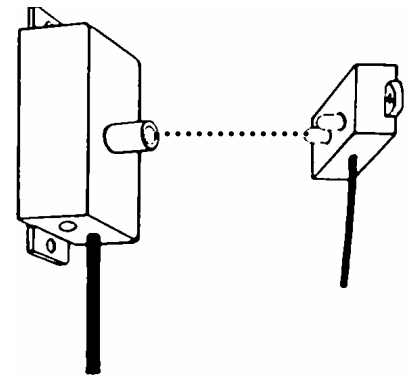
Dimensions transmitter: approx. 40 x 25 x 21 mm (with fixing straps)

Dimensions receiver: approx. 91 x 40 x 47 mm (with fixing straps)

Recommended tilted mirror, if the infrared ray shall be deviated:

K002 Reflector mirror, see page 70

Price: 27.50 €



M136 LED-Signal lamp red, 12 V=

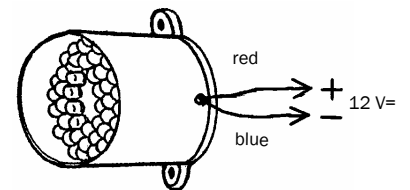
Signal lamp equipped with 39 very bright red LED's. Potted electronics for rough use in industry, machine halls or for the discotheque at home, medical practice etc. Fastening: surface with 2 screw loops. Operating voltage: 12 V=, < 150 mA, when using the enclosed protective resistor also for 24 V=.

Dimensions: approx. Ø 51 mm, 51 mm long

Available accessory:

When adding the Flasher M077, the LED signal lamp flashes (only for 12 V= operating voltage, module M077 is not enclosed). For M077 see page 45.

Price: 13.40 €



M137 LED-Signal lamp, green 12 V=

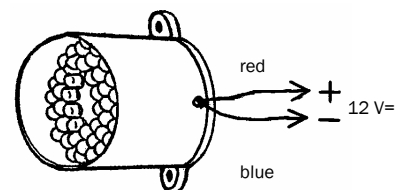
Signal lamp equipped with 39 green LED's. Potted electronics for rough use in industry, machine halls or for the discotheque at home, medical practice etc. Fastening: surface with 2 screw loops. Operating voltage: 12 V=, < 150 mA, when using the enclosed protective resistor also for 24 V=.

Dimensions: approx. Ø 51 mm, 51 mm long

Available accessory:

When adding the Flasher M077, the LED signal lamp flashes (only for 12 V= operating voltage, module M077 is not enclosed). For M077 see page 45.

Price: 13.40 €



M138 LED-Signal lamp, yellow 12 V=

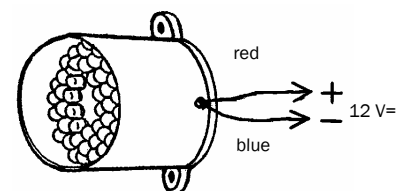
Signal lamp equipped with 39 yellow LED's. Potted electronics for rough use in industry, machine halls or for the discotheque at home, medical practice etc. Fastening: surface with 2 screw loops. Operating voltage: 12 V=, < 150 mA, when using the enclosed protective resistor also for 24 V=.

Dimensions: approx. Ø 51 mm, 51 mm long

Available accessory:

When adding the Flasher M077, the LED signal lamp flashes (only for 12 V= operating voltage, module M077 is not enclosed). For M077 see page 45.

Price: 13.40 €



M139 Solar cell

Nominal power: approx. 0.5 V 800 mA. Peak power: approx. 0.6 V (open-circuit voltage) > 2 amperes (max. short circuit current on illumination with a halogen lamp). High-quality "crystalline" solar cell, enclosed in a case which can be stringed. Several cells can be interconnected to solar collectors with higher electric tension.

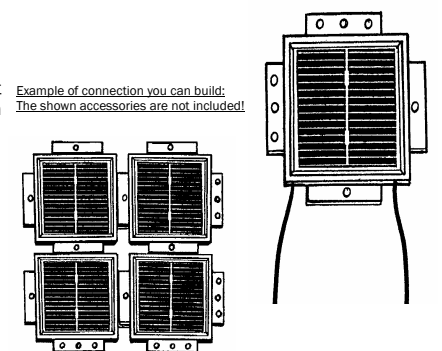
Dimensions: approx. 75 x 75 mm (with fixing straps)

Available accessory:

Solar motor no. P046 (0.5...2 V).

Dimensions: approx. 16 x 30 mm. Already rotates with 1 solar cell only! P046 - see page 57.

Price: 3.90 €

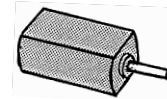


Example of connection you can build:
The shown accessories are not included!

P046 Solar motor for M139 Solar cell

Available accessories for M139: Solar motor no. P046 (0,5...2 V). Already rotates with 1 solar cell only!
Dimensions: approx. 16 x 30 mm, without axle

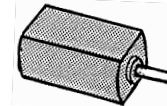
Price: **2.10 €**



P055 Electric motor

Operating voltage: 0,5...15 V.
Dimensions: approx. 37 x 20 mm, without axle

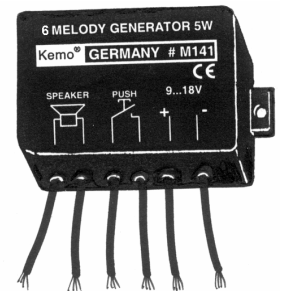
Price: **2.10 €**



M141 Melody generator 5 W

After pressing the key, this melody generator plays one of 6 different melodies in succession. Playing time: about 10...15 seconds each time. Operating voltage: 9...18 V=. Loudspeaker connection: 4...8 Ohm. Application: break signal, doorbell, alarm signal, etc. Max. output approx. 5 W.
Dimensions: approx. 60 x 45 x 20 mm

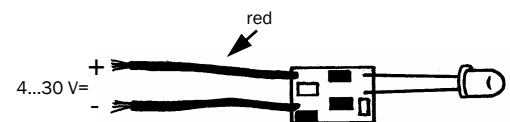
Price: **13.40 €**



M142 LED-Constant current 4...30 V=

This LED with soldered constant current electronics may be connected at any voltage between 4...30 V=. The LED always shines with almost constant brightness and has a current consumption of approx. 15 mA. An additional protective resistor is not required. The supplied LED can be exchanged for any other LED. It is also possible to connect several LED's in series.
Dimensions of the board: approx. 10 x 13 mm

Price: **2.10 €**



M143 FM Test transmitter

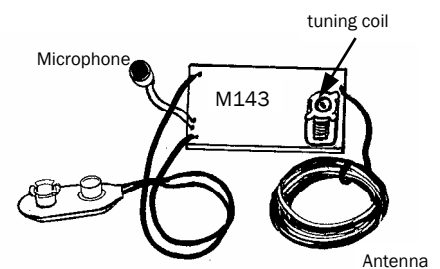
Mini-transmitting component adjustable to a frequency between 88...108 MHz. Operating voltage: 9 V battery. The microphone is built-in.

Important information: Any possession of this transmitter is prohibited and punishable within the member states of the European Union as well in the area of the states to the agreement on the European Economic Zone as well as in many other countries, too. The transmitter may only be sold for export to countries or areas where this transmitter is not prohibited. (Perhaps on vessels in international waters, exotic vacation spots, USA).

Dimensions: approx. 30 x 17 x 12 mm

Price: **10.80 €**

Fitting case: **G027**



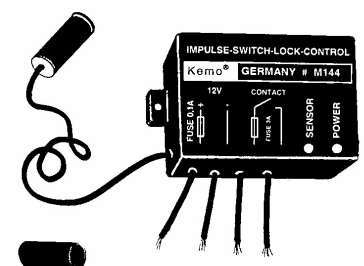
M144 Impulse switch-lock control

for locks, doors and central lockings in motor vehicles

A small magnet has to fixed at the lock mechanism or door. If the magnet approaches the sensing device (reed contact) of the acknowledgement transmitter, a relay picks up once for a moment (pulse duration approx. 0,5...1,5 sec.). By means of the relay point it is then possible to switch on the horn, flasher lamps or the like for a while. Operating voltage: 12 V= (11 V...15 V), current consumption < 9 mA. Relay point: 1 x ON, max. 25 V 3 A.

Dimensions: approx. 71 x 45 x 22 mm

Price: **13.40 €**

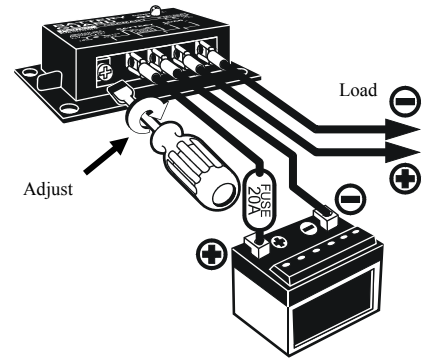


M148A Battery guard 12 V=

This accumulator saver protects your car battery from total discharge by switching off consumers such as ice boxes, heaters, radios + television sets, etc. in time. It switches on again automatically after return of the normal voltage. The interrupting voltage is adjustable: approx. 10.4...13.3 V, max. 20 A.

Technical data:

Operating voltage: 12 V accumulator
 Max. switching capacity: 20 A (10 A without cooling, 20 A with additional cooling)
 Interrupting voltage: adjustable approx. 10.4...13.3 V
 Resetting voltage: approx. 0.8 V (± 0.3 V) higher than the adjusted interrupting voltage
 Cutoff element: power MOS transistor in the negative line
 Own current consumption: < 0.7 mA in OFF condition, < 1.6 mA in ON condition (LED lights)
 Dimensions: approx. 87 x 60 x 32 mm (with mounting bottom)



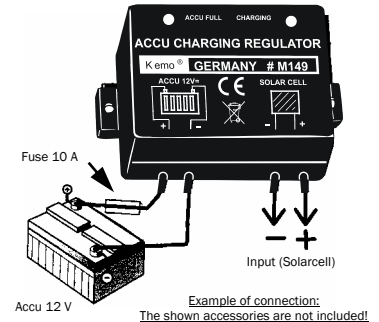
Price: 15.00 €

M149 Solar charging controller 12 V= 6 A

This solar charging controller is connected between a solar cell 12 V= (open circuit voltage 14...22 V=) and an accumulator 12 V= to prevent an overcharge of the accumulator. LED displays for "accu full" (approx. 14.4 V=) and "charging". Own power consumption < 2,5 mA.

Technical data:

Input voltage: solar cell panels: 14...22 V= open circuit voltage, nominal voltage: 12 V=
 Max. input current: 6 A, short-time till 5 min: 10 A
 Inrush voltage: battery voltage < approx. 13,4 V
 Interrupting voltage: battery voltage > approx. 14,4 V
 Displays: 1 LED for "Charging", 1 LED for "Accu full"
 Own power consumption: < 2,5 mA (LED switched on)
 Dimensions: approx. 72 x 50 x 42 mm (without fixing straps)



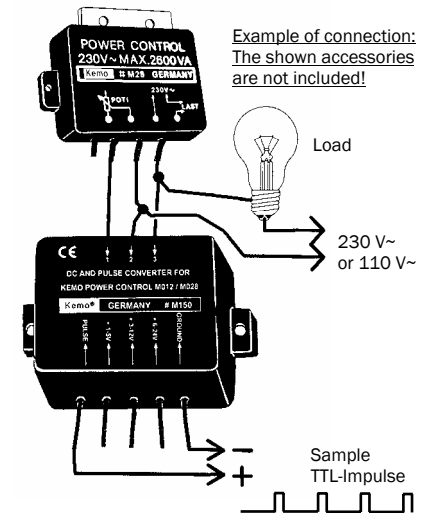
Price: 13.40 €

M150 DC and pulse converter

By connecting this module in series, it is possible to control our dimmer modules (230 V~ or 110 V~) M012, M028, M028N (from microcomputers or PCs) with a DC voltage or a pulse width modulation. This module is connected at the spot of the potentiometer. Galvanic separation of the control circuit via optocouplers. Control may be done optionally (at 230 V~): DC 1...5 V, DC 3...12 V, DC 6...24 V. Or TTL rectangular pulses 5 V= 1...10 kHz pulse width 10...90 % PWM (Puls width modulation). Regulation is done by changing the pulse width.

Technical data:

Operating voltage: 110 V~ or 230 V~ (is led to the dimmer module via the connections)
 Output: The module delivers a control voltage for the potentiometer input of the dimmer modules M012, M028 or M028N
 Input: The module M150 may either be controlled with control DC voltages of 1...5 V= or 3...12 V= or 6...24 V=. Or with TTL pulses with a pulse width modulation. Frequency between 1...10 kHz, impulse voltage approx. 5 V=, pulse width 10...90 % PWM. The power is adjusted with the pulse width 10...90 %.
 Input resistances: control input 1...5 V= > 1,4 k, control input 3...12 V= > 4,1 k, control input 6...24 V= > 9,1 k
 TTL pulse input: > 1,1 k
 Galvanic separation: via an optocoupler between the control inputs and the signal output towards the dimmer module
 Dimensions: approx. 70 x 60 x 23 mm



Price: 16.30 €

Output power of the dimmer module on gradual shutoff with:

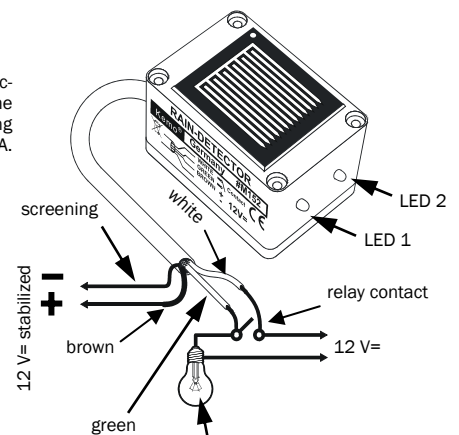
| | | | | | |
|------|-------|-------|--------------|--|----------------------|
| 1 V= | 3 V= | 6 V= | 10 % TTL PWM | | power: "0" |
| 3 V= | 8 V= | 16 V= | 50 % TTL PWM | | power: approx. 50 % |
| 5 V= | 12 V= | 24 V= | 90 % TTL PWM | | power: approx. 100 % |

M152 Rain sensor 12 V=

If the sensor plate gets into contact with rain or slushy snow / hail, it switches on a relay. Sun blinds may be retracted with that, skylights may be closed or a simple rain alarm can be given. The automatically heated surface of the sensor prevents any freezing or wetting of the sensor surface. 2 installed LEDs indicate the function. Operating voltage: 12 V=, current consumption: 8/120 mA (without / with heating). Relay contact: 1 x ON, max. 25 V 2 A. Waterproof-encapsulated electronics.

Technical data:

Operating voltage: 12 V=
 Current consumption without / with heating: approx. 8 / 120 mA
 Relay contact: 1 x ON, maximum load 25 V 2 A
 Sensor heating: automatically in case of contact with rain
 Light-emitting diode 1: indication that the rain sensor works
 Light-emitting diode 2: indication that rain is reported and the relay has switched on
 Duty cycle of the relay: as long as the sensor is wet
 The module is encapsulated waterproof.
 Active sensor surface, gold-plated: approx. 29 x 30 mm
 Overall dimensions: approx. 64 x 44 x 36 mm



Price: 27.50 €

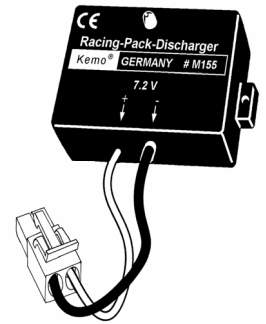
Example of the connection of an incandescent lamp 12 V that lights up when it is raining

M155 Discharger for 7,2 V - racing packs

...discharges partially charged 7,2 V racing packs to prevent a memory effect and thus to increase the accumulator's life. The accumulator is discharged to approx. 5,4 V (display through control LED) through a special protective circuit.

Technical data:

Connection voltage: 7.2 Volt (6 NiCd or NiMH cells)
 Discharge current: max. 0.45 ampere ($\pm 20\%$)
 Final discharge voltage: approx. 5.4 volts (0.9 volt per cell)
 Indicator: by LED
 Socket type: TAM socket type "A"
 Dimensions (W x D x H): approx. 59 x 44 x 24 mm (without fixing straps)



Price: 7.80 €

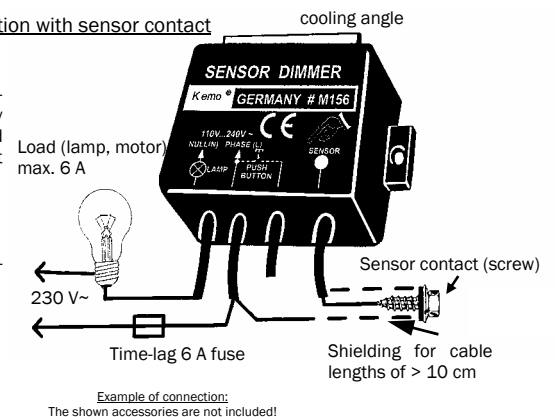
M156 Sensor dimmer 230 V ~, 1 kW

Dimmer for incandescent lamps and motors to be operated via push button or sensor contact. When pressing the key button, the power raises and decreases again automatically and keeps this setting if the key button is detached. If the key button is touched shortly in the desired setting, the dimmer switches off and upon touching it once again in the last dimmer setting it switches on again. Also to be employed as light dimmer in the clock frequency of 5...9 seconds per rise and decline.

Technical data:

Operating voltage: 220...240 V~, 50...60 Hz
 Loading capacity: max. 6 A
 Loads to be connected: incandescent lamps, electric motors and other inductive loads which may be regulated through phase control with a nominal voltage of 220...240 V~
 Operation: via a push button or a sensor contact using the finger (not enclosed)
 Threshold frequency: approx. 5...9 seconds for adjusting 1 x upward and downward again
 Dimensions: approx. 80 x 56 x 23 mm (without lateral fastening straps)

Operation with sensor contact



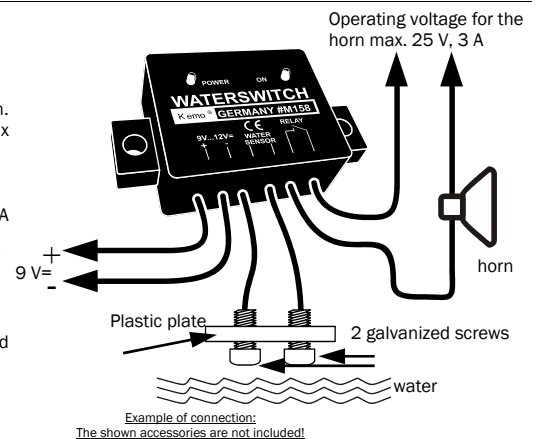
Price: 21.80 €

M158 Water switch 9...12 V=

If the 2 sensor connections of the module come into contact with water, the built-in relay switches on. Sirens, other cutoff relays, etc. may be triggered with that. Operating voltage: 9...12 V=. Relay contact 1 x ON max. 3 A / 25 V. 2 LED displays: "POWER" and "ON".

Technical data:

Operating voltage: 9 V DC voltage are ideal (max. 12 V), (please do only employ a stabilised power supply)
 Current consumption: "Ready": < 10 mA. In case of contact with water when the relay picks up: < 90 mA each with 9 V
 LED displays: 1 LED for the indication of readiness "POWER", 1 LED for the indication "ON", if the relay switches on
 Connections: via free cables
 Dimensions: sealing case approx. 59 x 44 x 20 mm (without fastening straps)
 Approved cable length towards the water sensors: max. 5 m with normal cable, max. 100 m with shielded cable, if the shielding braid is connected with the negative pole of the distribution voltage.



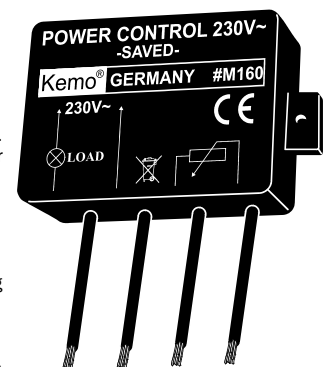
Price: 10.80 €

M160 Phase section regulator 110...240 V~ short circuit-proof

Output regulator for halogen transformers (normal and electronic transformers), incandescent lamps and resistive loads (e.g. heating elements). Power rating approx. 1.3 A (that are about 300 W at 230 V~ and about 140 W at 110 V~). This output regulator has a soft start (increases the lifetime of lamps) and is short circuit-proof.

Technical data:

Operating voltage: 110...240 V~, 50...60 Hz
 Max. current: approx. 1.3 A
 Connectable loads: halogen transformers, electronic or with standard transformer 50...60 Hz, incandescent lamps 110...240 V~ (same voltage as the operating voltage of the dimmer) and other resistive loads such as heatings, simple unregulated soldering irons, etc. The module is not suitable for motors and other consumers with built-in regulating electronics.
 Control range: approx. 0...95 %
 Powering up: soft start (this increases the lifetime of incandescent lamps considerably)
 Short circuit protection: the device switches off in case of a short circuit or a too high load and has to be switched on again (turn off the operating voltage and switch it on again)
 Dimensions: approx. 59 x 45 x 20 mm (without fastening straps)



Price: 25.80 €

M161 Ultrasonic power cannon

High-power ultrasonic pulse generator with loudspeaker

...to chase away wild animals such as martens, wild boars, deers etc from gardens, farmlands etc. The loudspeaker emits pulsed ultrasonic sounds (max. 120 dB ± 15 %), which have an acoustic range of up to 300 m with a tube placed upon (not included).

Technical data:

Operating voltage: 12...14.4 V
 Power consumption: max. 150 mA
 Frequency: approx. 22 kHz (not audible to men)
 Frequency curve: sine
 Pulse width: approx. 0.5 sec.
 Pulse sequence: approx. 5 sec.

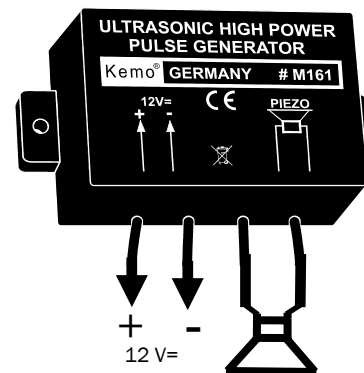
Indication: LED that flashes at impulses when the loudspeaker is connected

Loudspeaker output: for piezo-loudspeakers. Max. 2 each of the enclosed type L010 may be operated in parallel (1 loudspeaker is attached).

Dimensions of the module: approx. 60 x 46 x 20 mm (without fastening straps)

Data of the attached loudspeaker:

Type: L010
 Diameter: approx. 41 mm
 Height: approx. 12 mm
 Frequency range: approx. 2...60 kHz
 Max. sound pressure: max. approx. 120 dB (± 15 %)
 Type: piezo



Loudspeaker L010

Price: 21.60 €

M167 Level indicator for water tanks (Remote sensing up to 100 m)

Battery-powered level indicator for measuring the liquid level of water tanks such as rainwater, sewage chambers or slurry tanks from a distance of up to 100 m. After touching the button, indication occurs via 10 LEDs in steps of 10 % each (indication 10...100 %). The device is earmarked for wall assembly (approx. 120 x 70 x 20 mm) and requires 2 batteries „AA“. Connection is made via terminals inside the device. A normal signal cable (telephone cable, control wire or the like) with at least 11 cores is necessary to connect your water tank with the level indicator (cable is not included). You may also employ cables with less cores, but then it will not be possible to use all indication steps (e.g. with 8 cores only 7 LED indication steps may be used, which is, however, often sufficient).

Technical data:

Operating voltage: 3 V (2 built-in AA batteries)
 Display: max. 10 LEDs and 1 LED for the battery control
 Measuring points in the water tank: 1...10, switchable
 Current consumption during the measurement (button is pushed): max. 50 mA if all LEDs light up
 Max. cable length between the level indicator and water tank: 100 m
 Required cable to the water tank: telephone cable or similar cable with at least 11 cores
 Measuring current at the water tank probe: 50 µA per channel
 Dimensions: approx. 120 x 70 x 20 mm (without wall angle brackets)



Example of connection:
The shown accessories are not included!

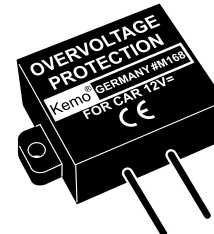
Price: 27.50 €

M168 Overvoltage protection 12 V

Voltage spike suppressor for motor vehicles – suppresses constantly all voltage spikes in the supply system of motor vehicles! Prevents damage to the sensitive supply system electronics through voltage spikes in the supply system.

Technical data:

Field of application: 12 V supply system of motor vehicles
 Max. energy rating: i max 8/20 µs 2000 A
 Dimensions: approx. 30 x 25 x 15 mm (without fixing straps)



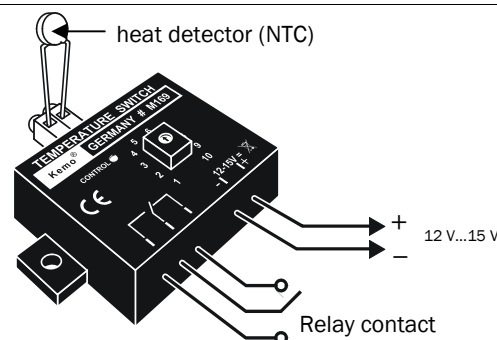
Price: 7.80 €

M169 Temperature switch-thermostat 12 V=

Adjustable electronic temperature switch. The sensor (Ø 5mm) may be connected with the control electronics via a cable with a length of up to 1 m.

Technical data:

Operating voltage: 12 V...15 V= stabilized (max. 0,1 A)
 Temperature range: approx. 0...100°C
 Switching output: relay contact 1 x switch-over max. 5 A / 25 V
 Dimensions: approx. 60 x 45 x 25 mm (without fixing straps)



Price: 13.40 €

M174 Solar charging regulator Dual 16 A

To be connected between a solar panel 12 V and 1 or 2 accumulators in order to avoid an overload of the accumulators. If 2 accumulators are connected, they are charged separately from each other. The accumulator with lowest charging voltage always receives more charging current. With LED displays and high charging capacity: max. 2 x 8 A or 1 x 16 A.

Technical data:

Input voltage: solar panels 15...22 V open circuit voltage, 12 V rated voltage
 Max. charging current: total 16 A (2 accumulators of max. 8 A each or 1 accumulator connected in parallel at both outputs up to 16 A)
 Connections: 1 or 2 accumulators 12 V. When connecting only 1 accumulator, it has to be connected at connection „2“.
 Displays: one display per accumulator „accumulator is charging“, 1 display: „all accumulators charged“.
 Refrigeration: In case of currents > 4 A the module has to be screwed with the metal bottom on a heat sink with a surface of > 300 sq. cm.
 Fuse: A pre-fuse F16 A is necessary (not included) Switch-on voltage: accumulator approx. < 13.4 V ± 5 %
 Switch-off voltage: „accumulator charged“ approx. 14.4 V ± 5 %
 Own current consumption (is taken from the accumulator): < 2 mA
 Reverse current-proof (no additional diode required)
 Dimensions: approx. 87 x 60 x 32 mm



Price: 18.90 €

FG002N Power control (Dimmer) 230 V~

This dimmer can regulate glow lamps, heating units, universal motors (e.g. manual drilling machines) steplessly and energy saving from null up to maximal. Constant power: maximal 800 Watt, temporary peak load: approx. 1600 Watt.

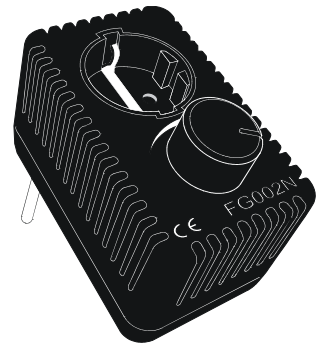
Technical data:

Operating voltage: 180...240 V ~
 Continuous load capacity: max. 800 W
 Short load capacity (max. 3 sec): 1600 W
 Dimensions: approx. 110 x 63 x 68 mm (without connector)



Only for indoor use!

Price: 43,20 €



FG008N Flasher, slow 230 V~, max. 300 W

Flasher with adjustable flash period: approx. 0.6...9 seconds turn-on time. Turn-off time approx. 50 % of the turn-on time, respectively. Built-in fuse: T 1.6 A. For electric light bulbs 25...300 watt, 230 V~. Use: billboards, model lighthouse etc.

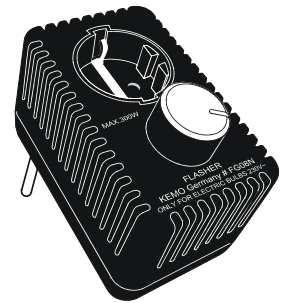
Technical data:

Operating voltage: 230 V~
 Flash period: approx. 0.6...9 sec., adjustable
 Dimensions: approx. 110 x 65 x 62 mm



Only for indoor use!

Price: 18.90 €



FG009 Twin flasher lamp 230 V~

This flasher lamp makes 2 incandescent lamps or light chains flashing alternately. Practical connector shell with 2 integrated euro-sockets.

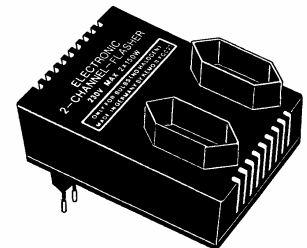
Technical data:

Operating voltage: 230 V~
 Load: max. 150 W per channel
 Clock speed: adjustable
 Dimensions: approx. 100 x 75 x 68 mm



Only for indoor use!

Price: 18.90 €



FG010 3-Channel running light 230 V~

This running light has 3 sockets where incandescent lamps, lamp groups or light chains of 230 V~ may be connected. Only incandescent lamps may be connected, no fluorescent lamps, quartz lamps, power saving lamps nor halogen bulbs with a superposed transformer! You may only connect lamps up to a maximum of 300 W total power to each socket.

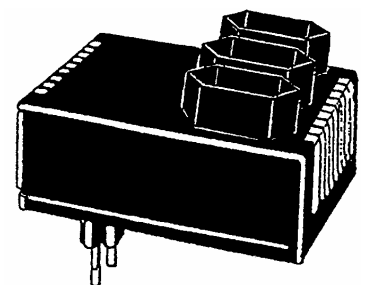
Technical data:

Operating voltage: 230 V~
 Channels: 3
 Load: max. 300 W per channel
 Running speed: adjustable
 Dimensions: approx. 100 x 65 x 75 mm



Only for indoor use!

Price: 21.60 €



FG011 Alarm flasher 230 V~

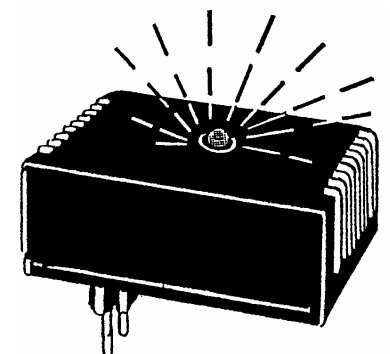
When this unit will be plugged into the socket, the integrated light-emitting diode starts to twinkle. Burglars, who can see this unit twinkle through the window, can suspect an active alarm system.

Dimensions: approx. 104 x 87 x 47 mm



Only for indoor use!

Price: 8.10 €



FG014 Marten repellent tester

Testing instrument to prove existing ultrasonic sounds (15...29 kHz) and high voltage (150...700 V=) at the contact plates. Thus the function of ultrasonic and / or contact plate marten repellents may be tested.

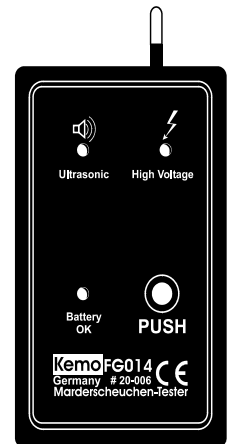
Technical data:

Operating voltage: 9 V battery
 Current consumption operation: 10...15 mA
 Battery check: automatically, if the instrument is switched on
 Frequency range: reacts to ultrasonic sounds in the range of 15...29 kHz (- 20 dB)
 Sensitivity: at 23 kHz approx. 40 dB
 Series resistor high voltage-tracer pin: 36 M Ohm
 Dimensions: approx. 100 x 60 x 25 mm



Only for indoor use!

Price: 32.90 €



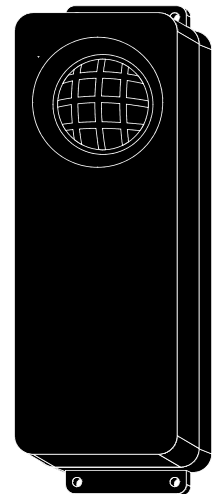
FG015 High power ultrasonic generator

...to drive away wild animals such as martens, rodents (e.g. out of carports, lofts, camper vans), wild boars, deer, etc. (from gardens, farmland, etc.). The device produces an enormously loud, pulsating and aggressive ultrasonic sound of about 21 kHz which is not audible to most people, but represents a considerable annoyance for wild animals which, therefore, try to avoid it. In some cases (not always!) it is also possible to drive away dogs and cats that are used to human community. The device is operated with 4 batteries R14 (UM2) which last up to 8 months depending on the quality.

Technical data:

Fastening: at walls or ceilings with 4 screws Ø 3 mm (not attached)
 Batteries: operation with 4 batteries UM2 (R14, round cell), not included
 Equipment-on indication: via a built-in LED which lights up during radiation of ultrasonic sounds
 Assembly: suitable for outside assembly but only at spots that are protected against splash water (under the canopy, installed into aviaries in the garden, under a parking caravan, etc.)
 Ultrasonic frequency: approx. 21 kHz (± 10 %)
 Mark space ratio: approx. 0,6 sec. ON, approx. 6 sec. rest
 Sound pressure: > 100 dB (± 15 %)
 Angle of radiation: > 120 degrees
 Loudspeaker: special piezoelectric ultrasonic high-power loudspeaker with lacquered (humidity-proof) membrane
 Acoustic range: > 200 m
 Operating voltage: 6 V (4 x batteries UM2)
 Current consumption: rest: approx. 0,000005 A, active time: approx. 0,005 A
 Tested temperature range: - 15° C...+ 60° C
 Dimensions: approx. 190 x 70 x 33 mm L x W x D (dimensions without fixing straps)

Price: 52.50 €



FG016 Exhaust control

If an exhaust hood is switched on with the window closed and a hearth is in use (oven, fireplace), it sucks toxic carbon monoxide gases from the fireplace into the room and may kill men and animals in the room. This exhaust control ensures that the exhaust hood (or other exhaust ventilators) may only be switched on if the window is in tilt position.

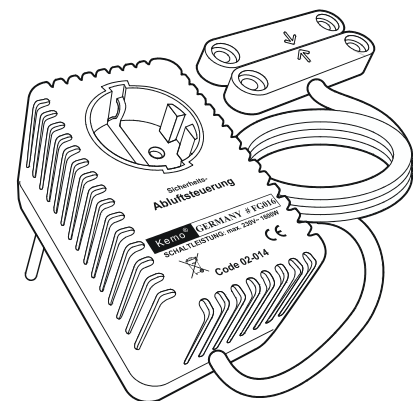
The Fireplace Directive (M-FevVO§4) prohibits the operation of a fireplace and simultaneous suction of air, unless there is a sufficient fresh air supply (e.g. window in tilt position).

The magnetic sensor of the exhaust control is fitted at the window. The exhaust hood can only be switched on if this transmits the signal "window open" via the approx. 5 m long cable. A back suction of dangerous flue gases into the living spaces is thus prevented. The exhaust control is an adapter plug, which is simply put between the socket and the plug of the exhaust hood.

Technical data:

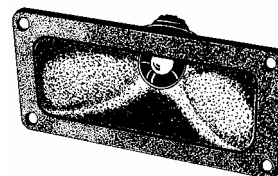
Cable length between the magnetic switch + adapter plug for the exhaust hood: approx. 5 m white
 Adapter plug (safety mains plug with safety socket) white, dimensions approx. 112 x 67 x 63 mm (measured without safety plug)
 Switching capacity (consumer maximally suitable for connection) 230 V~ 1600 W
 Fuse in the device: 8...10 A 5 x 20 mm
 Magnetic switch white: dimensions: approx. 54 x 11 x 10 mm (is fixed at the window frame)
 Magnet case white: dimensions: approx. 54 x 11 x 10 mm (is fixed at the casement)

Price: 32.90 €



L001 Piezo-spherical cap-tweeter with flare

High-quality piezo-spherical cap-tweeter with flare approx. 65 x 145 mm, approx. 40 mm deep. Frequency range: approx. 2.500...45.000 Hz. This tweeter can be connected directly at the amplifier or at a diplexer. This tweeter has a vaulted aluminium spherical cap and no conical membrane (as usual with flare loudspeakers). Due to the aluminium spherical cap the acoustic pressure is not so strong as with comparable other piezo-tweeters. In return the loudspeaker has a very broad angle of radiation and a very good brilliant sound. Due to the aluminium spherical cap with its special radius of gyration and very low mobile mass the frequency response is very clean up to 45.000 Hz. Therefore this tweeter is especially suitable as ultrasonic loudspeaker for the control of parasites (against rodents, vermins etc.).
Dimensions: approx. 65 x 145 mm.



Price: 5.50 €

L002 Ultrasonic wall loudspeaker

Additional loudspeaker (Piezo) for our ultrasonic vermin scare No. M071N. An installed light emitting diode serves as operation indication. Range of transmission: approx. 6.000...45.000 Hz. Aluminium spherical cap membrane with a very broad angle of radiation. Suitable for mounting outside provided the loudspeaker will be installed protected from rain (e.g. under the roof ledge). The LED is loaded by the supplied ultrasonic wave frequency and thus does not require any additional operating voltage.
Dimensions: approx. 72 x 50 x 29 mm (without fixing straps)

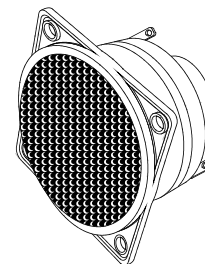


Price: 10.80 €

L003 Piezo-tweeter

Piezo-high tone loudspeaker with an installed transformer to increase the power. Concerning the technical Data this loudspeaker is indicated with a frequency response of approx. 5.000 ... 20.000 Hz, a top performance of 105 dB at a distance of 1 m. Our tests have shown that it also works very well in an ultrasonic-region of approx. 24.000 Hz. Due to the dynamic connection load 2 of these loudspeakers have to be connected in series (because of its little inner resistance 8 Ohm), and may then operate at our ultrasonic modules M048 and M071N. With this you have a very high output of radiation!

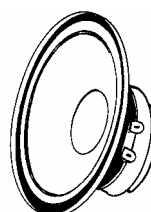
Dimensions: approx. 63,5 x 63,5 mm, 50 mm deep.



Price: 3.80 €

L006 Small loudspeaker

Small loudspeaker 8 Ohm, 0,25 W, Ø 45 mm, fitting for many kits!



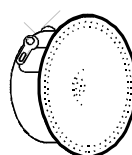
Price: 1.60 €

L010 Ultrasonic piezo loudspeaker

Ultrasonic piezo loudspeaker for our Ultrasonic power cannon M161.

Technical data:

Rated voltage: 16 Vp-p
Max. rated long power: 30 Vp-p
Frequency range: approx. 2 - 60 kHz
Sound pressure level: max. 120 dB (±15%)
Weight: approx. 6 g
Diameter: approx. 41 mm
Height: approx. 12 mm



Price: 5.50 €

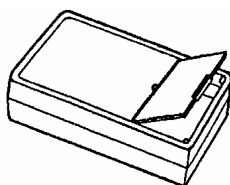
P5123 Mini-piezoelectric-tweeter for M094

Ø approx. 30 x 14 mm. With aluminium spherical cap for especially low distortion and constant high pitch radiation. Very suitable for ultrasonic vermin scares because these robust loudspeakers are small and can be installed in narrow angles 2.500...45.000 Hz.



Price: 3.70 €

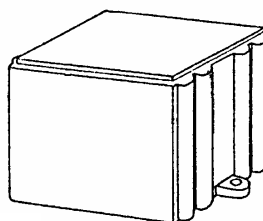
G01B 9 V Plastic case, small



Double wall black plastic case with battery box for incorporation of a 9 V-compound battery or two 1,5 V minicells. Dimensions (L x W x H) 101 x 60 x 26 mm

Price: 2.00 €

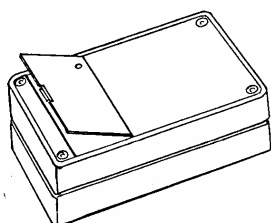
G007 Ribbed module case



Sealing case, black, without bottom, with fixing straps. Dimensions: approx. 67 x 65 x 37 mm

Price: 0.98 €

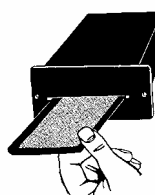
G02B 6 V Plastic case, large



Double wall black plastic case with a large battery box for incorporation of a battery support for 4 round cells. Dimensions: approx. 123 x 72 x 39 mm

Price: 2.78 €

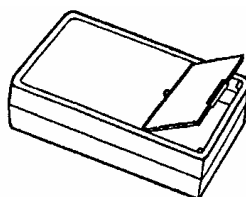
G008 Case for card reader



For cards in credit card size (approx. 54 x 85 mm). There are guiding notches available for the card and for the board. Dimensions: approx. 70 x 60 x 25 mm (without flange)

Price: 3.80 €

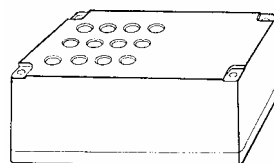
G03B 9V Plastic case with battery box



Double wall black plastic case with battery box for a 9V-compound battery or a battery holder for two AAA-battery cells. With sliding lid for the battery box. Dimensions: approx. 104 x 62 x 30 mm

Price: 2.40 €

G009 Code lock-wall case



Stable case for wall fastening with holes to hold 12 key buttons for a code lock. Suitable key buttons are deliverable, if mini-board key buttons are used. Dimensions: approx. 130 x 80 x 50 mm

Price: 6.60 €

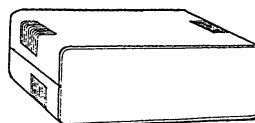
G004 Modul case



Sealing case black, without bottom. With fixings straps. Dimensions: approx. 60 x 45 x 20 mm

Price: 0.74 €

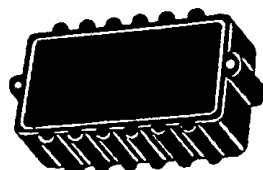
G010 Shell case



With ventilating slots and removable front panels. Colour: black. Dimensions: approx. 95 x 134 x 45 mm

Price: 3.30 €

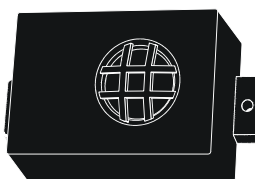
G006 Ribbed module case



Sealing case, black, without bottom, with fixing straps. Dimensions: approx. 61 x 35 x 23 mm

Price: 0.74 €

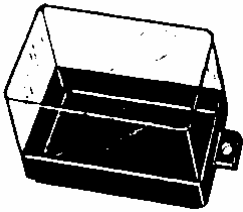
G020N Case for signals



Dimensions: approx. 72 x 50 x 28 mm
Screws are enclosed!

Price: 1.10 €

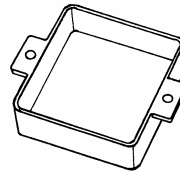
G021 Transparent case



Black bottom part with fixing straps and internal possibilities to fasten boards. Transparent upper part.
Dimensions without fixing straps: (L x W x H) approx. 72 x 50 x 40 mm

Price: 3.30 €

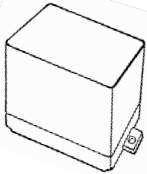
G059 Module case



Dimensions: approx. 40 x 40 x 13 mm

Price: 0.48 €

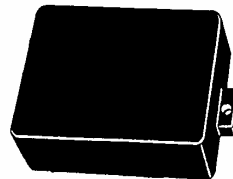
G022 Case with fixing straps



Inside there are 4 screw nipples to fasten one board. The case will be screwed down by using the 4 attached screws.
Dimensions: approx. 72 x 50 x 63 mm (without fixing straps L x W x H)

Price: 3.30 €

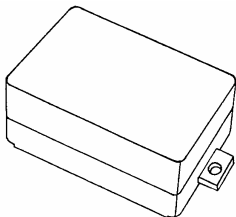
G060 Modul case



Sealing case black, without bottom
Dimensions: approx. 70 x 60 x 23 mm (without fixing straps)

Price: 0.98 €

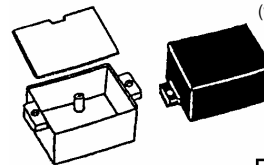
G023 Case with fixing straps



Inside there are 4 screw nipples to fasten one board. The case will be screwed down by using the 4 attached screws.
Dimensions: approx. 72 x 50 x 27 mm (without fixing straps L x W x H)

Price: 1.90 €

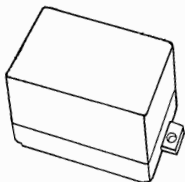
G061 Mini module case



With fixing straps and cover. With fastening pivot for a board. Color: black.
Dimensions: approx. 30 x 25 x 15 mm (without fixing straps)

Price: 0.48 €

G024 Case with fixing straps



Inside there are 4 screw nipples to fasten one board. The case will be screwed down by using the 4 attached screws.
Dimensions : approx. 72 x 50 x 40 mm (without fixing straps L x W x H)

Price: 1.90 €

G070 Module case long

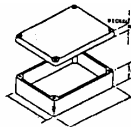


Black sealing case with possibility to fasten one board. The bottom is open. With fixing straps. Dimensions: approx. 120 x 50 x 24 mm (incl. fixing straps)

Price: 1.18 €

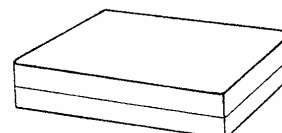
Plastic case, black

With a wall thickness of 1.8 mm. Delivery with four fastening screws for the case cover. The height of covers varies according to the type of cases. Therefore, the cases are usable for general purposes. Packed in poly-bag with SB-suspension.



| No. | Dimensions: | Price |
|------|-------------|---------------|
| G025 | 72x50x21mm | 1.18 € |
| G026 | 72x50x28xmm | 1.18 € |
| G027 | 72x50x35mm | 1.30 € |
| G028 | 72x50x42mm | 1.30 € |
| G029 | 72x50x63mm | 1.90 € |

G080 Standard flat-case

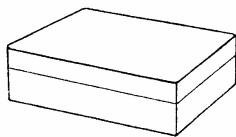


Dimensions: approx. 120 x 70 x 20 mm

Price: 3.30 €

G081 Standard case

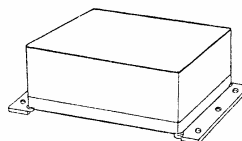
Dimensions: approx. 120 x 70 x 35 mm



Price: 3.30 €

G086 Standard wall case "middle"

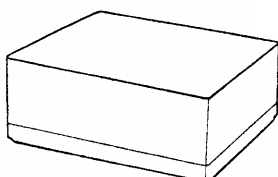
Dimensions: approx. 120 x 70 x 50 mm



Price: 4.40 €

G082 Standard case "middle"

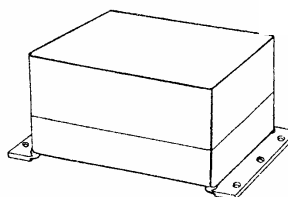
Dimensions: approx. 120 x 70 x 50 mm



Price: 3.30 €

G087 Standard wall case "high"

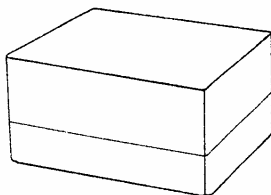
Dimensions: approx. 120 x 70 x 65 mm



Price: 4.80 €

G083 Standard case "high"

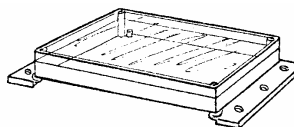
Dimensions: approx. 120 x 70 x 65 mm



Price: 3.90 €

G088 Transparent wall case "flat"

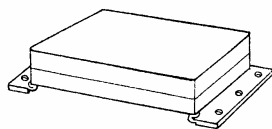
Dimensions: approx. 120 x 70 x 15 mm



Price: 4.40 €

G084 Standard wall case "flat"

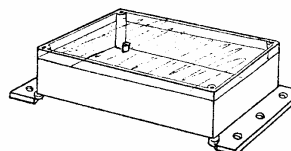
Dimensions: approx. 120 x 70 x 20 mm



Price: 3.90 €

G089 Transparent wall case "standard"

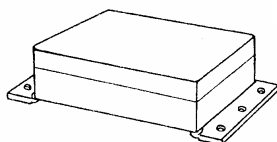
Dimensions: approx. 120 x 70 x 30 mm



Price: 4.40 €

G085 Standard wall case

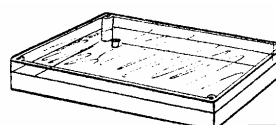
Dimensions: approx. 120 x 70 x 35 mm



Price: 3.90 €

G090 Transparent cover-case "flat"

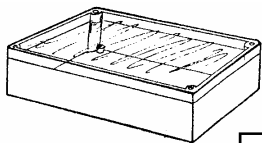
Dimensions: approx. 120 x 70 x 15 mm



Price: 4.20 €

G091 Transparent cover-case

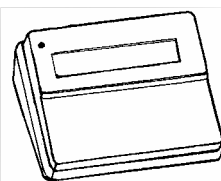
Dimensions: approx. 120 x 70 x 30 mm



Price: 4.40 €

G104 Small console case

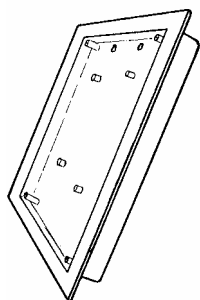
Dimensions: approx. 95 x 90 x 40 mm
Color: grey



Price: 3.70 €

G100 Display case

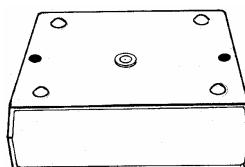
Dimensions: approx. 130 x 130 x 17 mm (L x B x D). With holes for wall fastening and wraparound edge for optional assembly of pictures. With transparent front panel. For installation of presentation electronics with illuminants (LEDs, neon lamps, etc.)



Price: 4.40 €

G108 Shell case

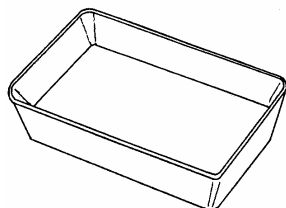
Dimensions: approx. 210 x 160 x 66 mm
Color: grey



Price: 13.40 €

G062 Working bowl

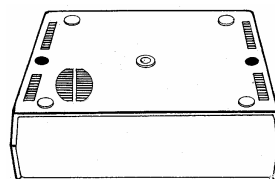
Made of plastic.
Dimensions: approx. 205 x 130 x 35 mm



Price: 1.40 €

G109 Shell case with loudspeaker grid

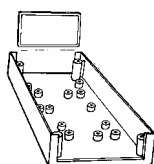
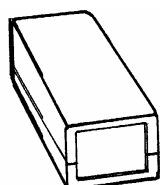
Colour: grey
Dimensions: approx. 260 x 195 x 90 mm



Price: 18.90 €

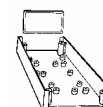
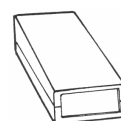
Case with front panels Colour: grey

| No.: | Dimensions approx. : | Price: |
|------|----------------------|---------------|
| G105 | 150 x 80 x 58 mm | 8.10 € |
| G107 | 150 x 80 x 30 mm | 6.60 € |

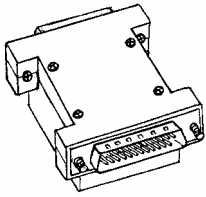


Case with front panels Colour: grey

| No.: | Dimensions approx. : | Price: |
|------|----------------------|---------------|
| G110 | 90 x 50 x 17 mm | 3.70 € |
| G111 | 90 x 50 x 25 mm | 3.70 € |
| G112 | 90 x 50 x 33 mm | 4.40 € |
| G113 | 120 x 60 x 30 mm | 4.40 € |
| G114 | 120 x 60 x 40 mm | 4.90 € |
| G117 | 120 x 60 x 50 mm | 5.50 € |



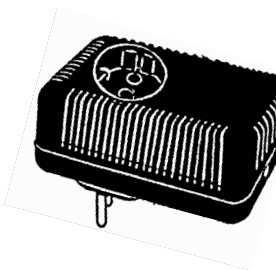
G123 Computer module case



With 25-pole SUB-D-plug and 25-pole SUB-D-jack. For installation of adapters and appliances which shall be operated at the parallel port of the computer.
Dimensions: approx. 73 x 56 x 30 mm

Price: 5.80 €

STG15 Connector case with socket



Case with injection-moulded shock-proof plug and injection-moulded shock-proof socket (each with grounding bow). Colour: black.
Dimensions: approx. 110 x 65 x 62 mm

Price: 5.80 €

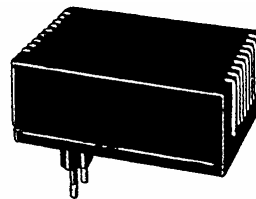
G200 Lighting console-case



Solid stable construction, colour: black.
Dimensions: approx. 284 x 160 x 76 mm

Price: 16.30 €

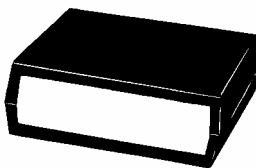
STG20 Connector case, large



Large connector shell with mains plug. Colour: black.
Dimensions: approx. 105 x 77 x 47 mm

Price: 2.00 €

G201 Lighting console-case with transparent front panel



As G200, however, with transparent front panel. Colour: black.
Dimensions: approx. 284 x 160 x 76 mm

Price: 16.30 €

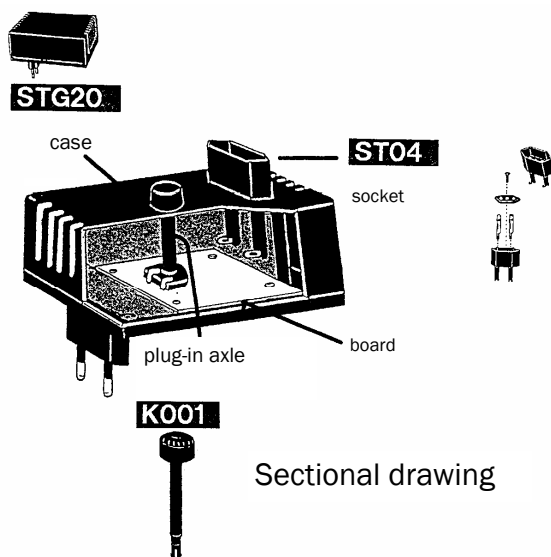
K001 Plug-in axle with button

Plug-in axle with injection-moulded button
Ø approx. 15 x 8 mm.
Total length together with button: approx. 46 mm



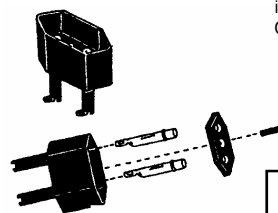
Price: 0.50 €

Accessories and possibility of application for our connector shell STG20



ST04 Euro-socket

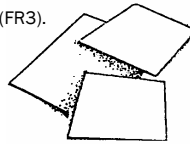
Insert-socket for 230 V~ mains plug. Delivery is effected disassembled in SB-bag. Color: black



Price: 1.10 €

E001 Platine FR3 approx. 160 x 100 x 1 mm

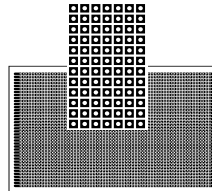
One-side copper layer approx. 35 µm. Special offer for "do-it-yourself-designers" of boards (FR3).
1 pack = 20 pc / price = 1 pc



Price: 1.10 €

E002 Experimental board - dot grid

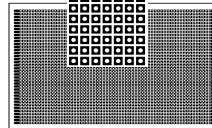
One-side copper layer approx. 35 µm, gold plated (better for soldering "lead-free").
Material FR2, approx. 1.5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 1.60 €

E004 Experimental board - dot grid

One-side copper layer approx. 35 µm, gold plated (better for soldering "lead-free").
Material FR4 Epoxid, approx. 1.5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 3.30 €

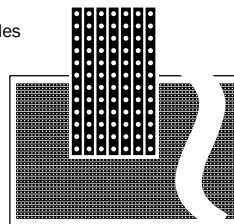
E012 Experimental board - strip grid

One-side copper layer approx. 35 µm, gold-plated (better for soldering "lead-free").
Material FR2, approx. 1.5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 100 mm.

Price: 1.30 €

E003 Experimental board - strip grid

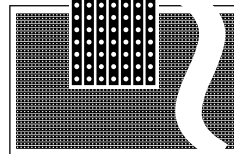
One-side copper layer approx. 35 µm, gold-plated (better for soldering "lead-free").
Material FR2, approx. 1.5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 1.60 €

E005 Experimental board - strip grid

One-side copper layer approx. 35 µm, gold-plated (better for soldering "lead-free").
Material FR4 Epoxid, approx. 1.5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 3.30 €

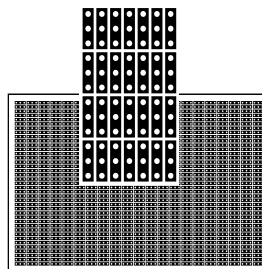
E011 Experimental board with strip raster

One-side copper layer approx. 35 µm, copper layer gold-plated (better for soldering "lead-free"). Material FR2, approx. 1,5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 500 mm.

Price: 6.60 €

E013 Experimental board with 3 strip raster

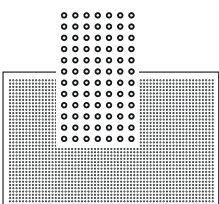
The strip raster is interrupted every 3rd hole. One-side copper layer approx. 35 µm, gold-plated (better for soldering "lead-free"). Material FR2, approx. 1,5 mm thick, hole distance approx. 2,54 mm, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 1.80 €

E010 Experimental board - punched raster

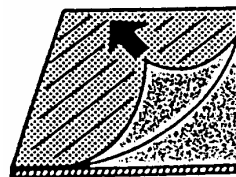
Raster: approx. 2,54 mm, without copper layer, approx. 1,5 mm thick.
Material FR2, diameter of holes approx. 1 mm. Dimensions: approx. 100 x 160 mm.



Price: 1.40 €

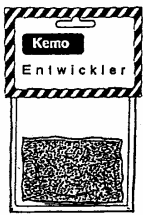
F001 Photopositive-coated board

One-side copper layer, approx. 35µm.
Material FR2. Dimensions: approx. 100 x 160 mm.



Price: 3.40 €

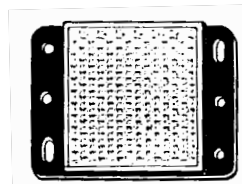
E100 Developer



For development of photopositive coated boards. Double welded in 2 polybags with SB-suspension.

Price: 0.98 €

K002 Reflector mirror

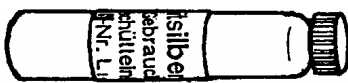


For infrared light barriers. Dimensions: approx. 51 x 69 mm, 8 mm thick.

Price: 3.30 €

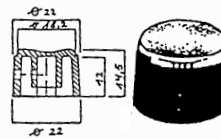
L100 Conductive silver

Silver-conductive lacquer with excellent adhesive power. Ideal for repairing boards, window alarm loops and window heatings. Very conductive: approx. 0,02 Ohm - 0,1 Ohm/cm². Based on the new regulations, we supply this lacquer jointly with the package insert "DIN-Safety Data Sheet" in glass bottles and SB-packing. (Contents of bottle approx. 3 g)



Price: 4.90 €

K062-4 Turning knob with grub screw for Ø 4 mm axle

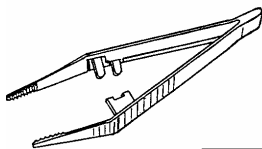


Knob body, black, with grey cap. Knob approx. Ø 22 mm x 14,5 mm. Stable fastening with set screw M3 and nut.

Price: 0.58 €

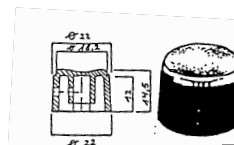
W001 Plastic forceps

Length approx. 125 mm. Internal geared point with an especially broad and flexible clamping surface. Ideal for works at alive parts or for handling caustic baths.



Price: 0.48 €

K062-6 Turning knob with grub screw for Ø 6 mm axle

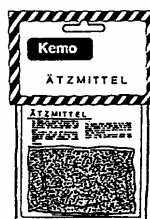


Knob body, black, with grey cap. Knob approx. Ø 22 mm x 14,5 mm. Stable fastening with set screw M3 and nut.

Price: 0.58 €

Ä100 Corrosive

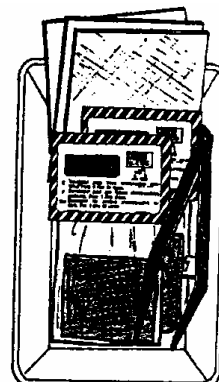
White corrosive: approx. 100 g (sodium persulphate) for engraving of boards. Sufficient for 0,5 l water.



Price: 1.98 €

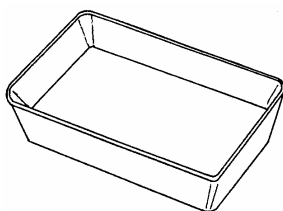
Ä200 Corrosive set, complete

3-copper-clad + 1 photo-coated board, 1 developer, 1 corrosive, 1 forceps, 1 working bowl, 1 comprehensive, illustrated instruction. Packed in stable polybags with SB-suspension.



Price: 11.20 €

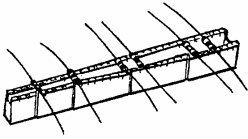
G062 Working bowl



Made of plastic. Dimensions: approx. 205 x 130 x 35 mm

Price: 1.40 €

A001 Bending device

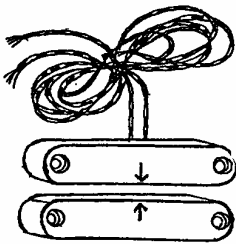


For resistors, diodes, chokes, capacitors and electrolytic capacitors. Earmarked for five grid sizes: 7,5 / 10 / 12,5 / 15 / 17,5 mm.

Price: 0.78 €

Alarm contact construction

The contact is closed (NC) when the magnet is connected. The alarm contact is potted humidity-proof. The electrical connection is not done via interference-prone threaded terminal ends at the alarm contact, but via cables which have to be soldered on (like prescribed by the VDS-regulations of the insurers a.o.). 1 Set consists of 1 magnet and 1 potted alarm contact with pigtails. Available in brown or white. Dimensions: approx. 43 x 10 x 11 mm. Rupturing capacity max. 0,3 A / 40 V.



A002
brown

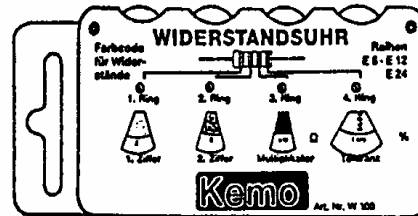
Price: 3.80 €

A004
white

Price: 3.80 €

W100 Resistance timer / colour code

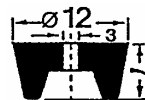
This resistance timer is readable from both sides and substitutes the old colour code timers with 3 wheels. Steady wipeable performance! Front: For the series E6, E12, E24. Back: For the series E48 and E96.



Price: 1.10 €

G030 Case feet, black, small

For screwing down, made of soft-plastic.

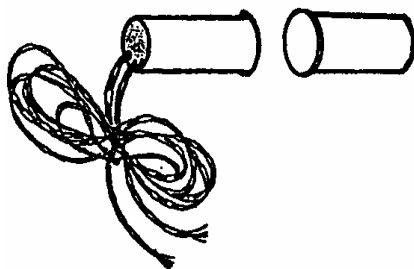


Price: 0.17 €

A003 Alarm contact for embedding

The contact is closed (NC) when the magnet is connected. The alarm contact is potted humidity-proof. This alarm contact is embedded into the door folding or window rabbet.

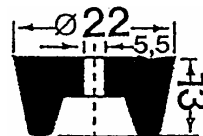
Boring: approx. \varnothing 9,2 x 22 mm. Colour: brown.



Price: 3.80 €

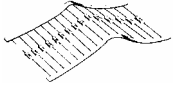
G050 Case feet, black, large

For screwing down, made of soft-plastic.



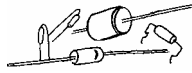
Price: 0.17 €

S001 Resistors
approx. 200 pieces



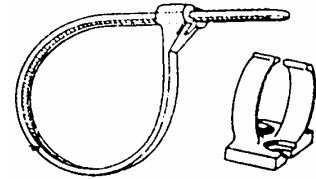
Price: 1.78 €

S011 Diodes with data sheet
approx. 100 pieces



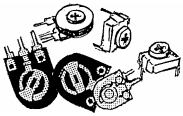
Price: 3.30 €

S028 Cable ties 1 set



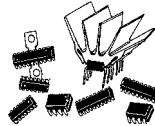
Price: 1.10 €

S003 Trimming potentiometers
approx. 50 pieces



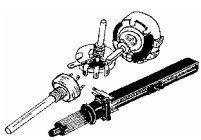
Price: 3.30 €

S012 Integrated circuits + data
approx. 20 pieces



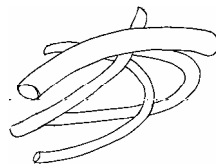
Price: 3.30 €

S004 Potentiometers etc.
approx. 20 pieces



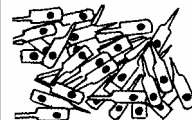
Price: 4.40 €

S013 Insulating plastic tube



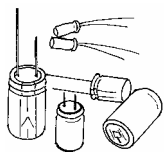
Price: 1.90 €

S030 Board flat plugs
approx. 100 pieces



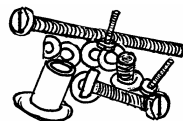
Price: 1.10 €

S005 Elektrolytic capacitors
approx. 50 pieces



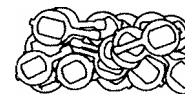
Price: 2.00 €

S017 Screws + accessories



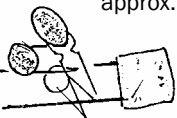
Price: 1.18 €

S032 Lug
approx. 30 pieces
for S030 board flat plugs



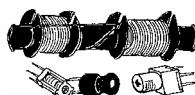
Price: 1.10 €

S007 Ceramic capacitors
approx. 100 pieces



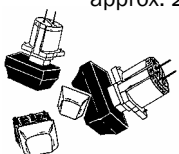
Price: 2.00 €

S023 Coils, chokes
approx. 50 pieces



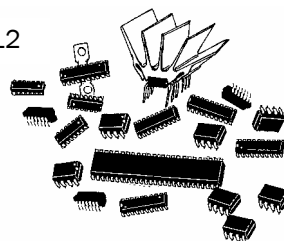
Price: 3.30 €

S009 Switches + key buttons
approx. 20 pieces

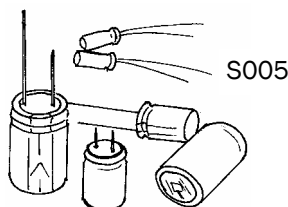
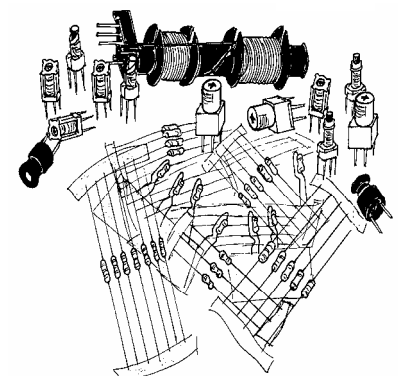


Price: 3.30 €

S012

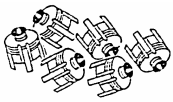


S023



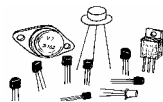
S005

S035 Trimming capacitors,
ceramic, approx. 20 pieces



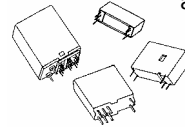
Price: 1.60 €

S046 Transistors T03/T092 data
approx. 20 pieces



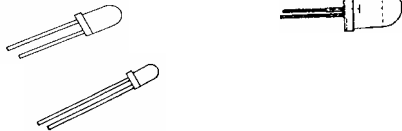
Price: 2.00 €

S054 Relays
approx. 5 pieces



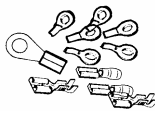
Price: 2.40 €

S036 Light emitting diodes
approx. 30 pieces



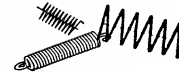
Price: 1.60 €

S049 Soldering terminals,
assorted, approx. 50 pieces



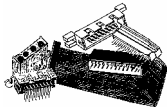
Price: 1.00 €

**S056 Compression +
tension springs**
approx. 30 pieces



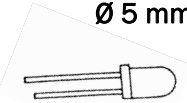
Price: 1.00 €

S039 Computer connectors
approx. 25 pieces



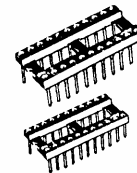
Price: 4.40 €

S050 LED's red-green-yellow
Ø 5 mm, approx. 18 pieces



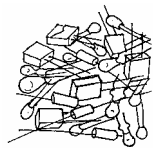
Price: 1.60 €

S057 IC-socket
approx. 30 pieces



Price: 1.60 €

S040 Tantalum elcas, bead + AX
approx. 100 pieces



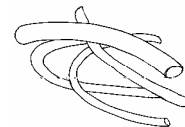
Price: 4.40 €

S051 Fuses, approx. 30 pieces



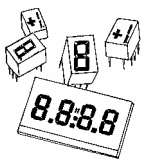
Price: 1.60 €

S058 Heat shrink tubes
approx. 15 pieces



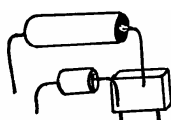
Price: 2.20 €

S043 Numeric display LED + LCD
approx. 10 pieces



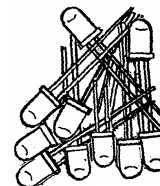
Price: 3.30 €

S052 Foil capacitors
approx. 100 pieces



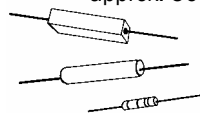
Price: 4.00 €

S062 LED Ø 5 mm red
approx. 10 pieces

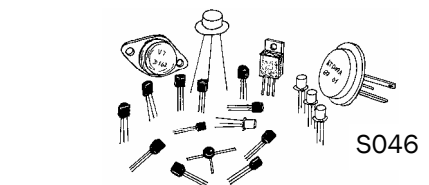


Price: 0.70 €

S053 Power resistors 1...7 W
approx. 50 pieces

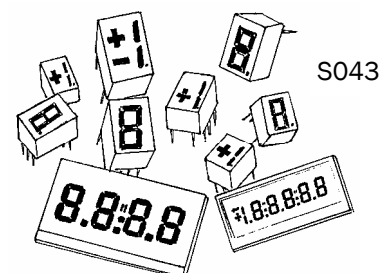
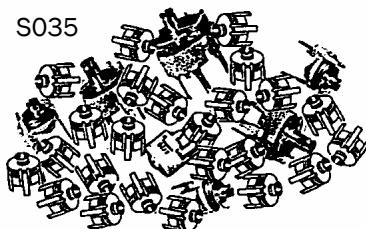


Price: 2.00 €

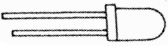
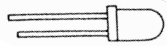

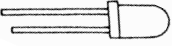
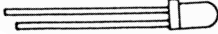
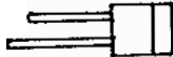
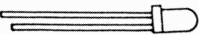
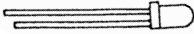
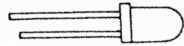
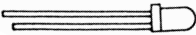
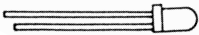
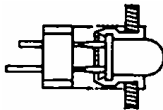
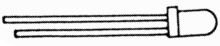


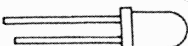
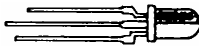
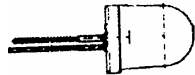
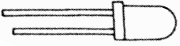
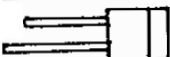
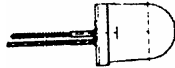


S046

S035

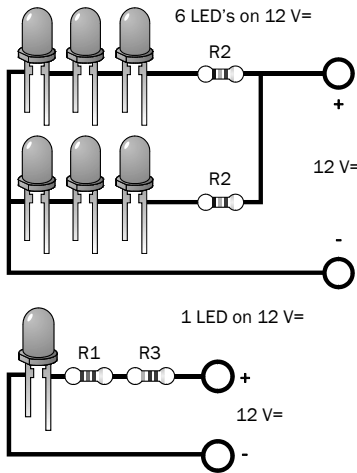


S043

| | | |
|--|---|---|
| <p>S063 LED Ø 5 mm green approx. 10 pieces</p>  <p>Price: 1.00 €</p> | <p>S070 LED Ø 5 mm yellow approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S079 Line-up LED red approx. 10 pieces Ø 5 mm</p>  <p>Price: 0.74 €</p> |
| <p>S064 LED Ø 5 mm yellow approx. 10 pieces</p>  <p>Price: 1.00 €</p> | <p>S071 LED Ø 3 mm red approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S080 Line-up yellow approx. 10 pieces Ø 5 mm</p>  <p>Price: 0.74 €</p> |
| <p>S065 LED Ø 3 mm red approx. 10 pieces</p>  <p>Price: 1.00 €</p> | <p>S072 LED Ø 3 mm green approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S081 Infrared-LED Ø 5 mm approx. 10 pieces</p>  <p>Price: 1.00 €</p> |
| <p>S066 LED Ø 3 mm green approx. 10 pieces</p>  <p>Price: 1.00 €</p> | <p>S073 LED Ø 3 mm yellow approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S085 LED-socket Ø 5 mm approx. 10 pieces</p>  <p>Price: 1.10 €</p> |
| <p>S067 LED Ø 3 mm yellow approx. 10 pieces</p>  <p>Price: 1.00 €</p> | <p>S074 Blink-light Ø 5 mm red approx. 5 pieces</p>  <p>Price: 1.60 €</p> | <p>S089 LED Ø 10 mm red approx. 5 pieces</p>  <p>Price: 1.00 €</p> |
| <p>S068 LED Ø 5 mm red approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S076 DUO-LED Ø 5 mm red/green approx. 10 pieces</p>  <p>Price: 1.60 €</p> | <p>S091 LED Ø 10 mm green approx. 5 pieces</p>  <p>Price: 1.10 €</p> |
| <p>S069 LED Ø 5 mm green approx. 50 pieces</p>  <p>Price: 3.30 €</p> | <p>S078 Line-up LED green approx. 10 pieces Ø 5 mm</p>  <p>Price: 0.74 €</p> | <p>S092 LED Ø 10 mm clear-red approx. 5 pieces</p>  <p>Price: 1.10 €</p> |

S093 LED-creative-set

Approx. 50 light-emitting diodes and 20 resistors. For operation of the light-emitting diodes at 6 V= or 12 V=. With detailed description and connecting diagrams.



Price: 4.40 €

S095N LED 8 x 8 mm tinted-yellow

approx. 5 pieces



Price: 1.10 €

S096N LED 8 x 8 mm tinted-green

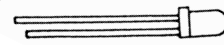
approx. 5 pieces



Price: 1.10 €

S097 LED Ø 3 mm orange

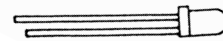
approx. 10 pieces



Price: 0.74 €

S101 LED Ø 5 mm blue

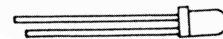
approx. 5 pieces



Price: 1.10 €

S102 LED Ø 3 mm white




approx. 5 pieces



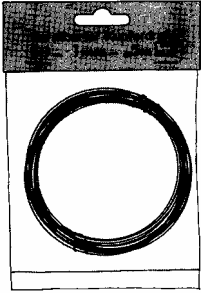
Price: 1.10 €

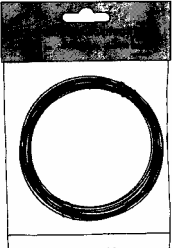
| Article-No. | Article | Roll-Length/Dimensions | Price |
|-------------|---------------------|------------------------|--------|
| HF001 | High frequency litz | approx. 10 m | 1.60 € |




| | | | | |
|-------|-----------------|------------------------|--|--------|
| FE003 | Flat rod | approx. 13 x 5 x 55 mm |  | 1.10 € |
| FE004 | Ferrite antenna | approx. Ø 10 x 60 mm |  | 1.10 € |
| FE005 | Ferrite antenna | approx. 8 x 5 x 80 mm |  | 1.10 € |

Article-No. Article Roll-Length approx. Diameter approx. Price

| | | | | | |
|-------|---|-----------------------|--------|--------|--------|
| KL001 |  | Enamelled copper wire | 140 m | 0,1 mm | 2.00 € |
| KL002 | | 115 m | 0,2 mm | 2.00 € | |
| KL003 | | 55 m | 0,3 mm | 2.00 € | |
| KL004 | | 23 m | 0,4 mm | 2.00 € | |
| KL005 | | 23 m | 0,5 mm | 2.00 € | |
| KL006 | | 16 m | 0,6 mm | 2.00 € | |
| KL007 | | 12 m | 0,7 mm | 2.00 € | |
| KL008 | | 10 m | 0,8 mm | 2.00 € | |
| KL010 | | 6 m | 1,0 mm | 2.00 € | |
| KL012 | | 6 m | 1,2 mm | 2.00 € | |
| KL015 | | 4 m | 1,5 mm | 2.00 € | |

| | | | | | |
|-------|---|---------------------------|--------|--------|--------|
| KS006 |  | Silver-plated copper wire | 10 m | 0,6 mm | 2.00 € |
| KS008 | | 7 m | 0,8 mm | 2.00 € | |
| KS012 | | 3 m | 1,2 mm | 2.00 € | |
| KS015 | | 2 m | 1,5 mm | 2.00 € | |
| KS020 | | 0,8 m | 2,0 mm | 2.00 € | |

| | | | | | |
|------|---|-----------------|----------|----------|--------|
| W030 |  | Resistance wire | 5 m | 30 Ohm/m | 2.00 € |
| W044 | | 5 m | 44 Ohm/m | 2.00 € | |
| W060 | | 5 m | 60 Ohm/m | 2.00 € | |
| W062 | | 5 m | 62 Ohm/m | 2.00 € | |

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| M148A | Accu saver, Battery guard 12V= | 58 | FG002N | Dimmer (power control) 230V~ | 61 |
| M083 | Accu-charging regulator, 12V= | 46 | M063 | Dimmer, 12V~, 50W (or 24...48V~) | 43 |
| M102N | Accumulator charger, second, 6...24V= | 48 | M063N | Dimmer 12 V~ max. 10 A (or 24...48 V~) | 43 |
| M057 | Accumulator charging module | 42 | M156 | Dimmer, Sensor-, 230V~, 1kW | 59 |
| B136 | Acupuncture, electronic, 3...6V= | 18 | M043 | Discharge protection module, solar | 40 |
| B232Z | Additional light barrier for infrared stopwatch | 31 | M155 | Discharger for 7,2V, racing packs | 59 |
| A003 | Alarm Ccontact for embeddng, brown | 71 | | E | |
| A002 | Alarm contact construction, brown | 71 | P055 | Electric motor | 57 |
| A004 | Alarm contact construction, white | 71 | B136 | Electronic acupuncture, 3...6V= | 18 |
| B198 | Alarm display | 24 | M068 | Electronic card switch, 9V= | 44 |
| FG011 | Alarm flasher 230V~ | 61 | B093 | Electronic dice, 6V= | 11 |
| M117 | Alarm module for computers | 53 | M067 | Electronic dog barking | 43 |
| M061 | Alarm monitor | 42 | B155 | Electronic dog barking | 19 |
| B003 | Alternating flasher for 2 small lamps 6...16V=, max. 300mA | 2 | B152 | Electronic fence appliance | 19 |
| M079 | Alternating flasher/flasher for 1 to 10 LED's at max,6...12V= | 45 | B231 | Electronic key | 30 |
| M080 | Alternating flasher/flasher for small glow lamps 6...12V= | 45 | M126N | Electronic key, 12V= | 55 |
| B182 | Amplifier, 1W | 21 | B146 | Electronic melody "Coo Coo Waltz" | 18 |
| B125 | Amplifier, 200W | 16 | M131N | Electronic spare key ring for M126N+B231 | 55 |
| B115 | Amplifier, 8W | 15 | M069 | Electronic underground rodent pest repeller | 44 |
| B199 | Amplifier, antenna-, approx. 50...1000MHz | 24 | B239 | Electronic wheel of fortune, 9...12V= | 32 |
| M034 | Amplifier, power, 40W | 39 | B007 | Electrostat apparatus, 9...12V= | 2 |
| M040 | Amplifier, pre-, universal-, 9...24V= | 40 | ST04 | Euro-Socket | 68 |
| M055 | Amplifier, Stereo-, 3W | 41 | FG016 | Exhaust Control | 62 |
| M032 | Amplifier, universal-, 12W | 38 | E004 | Experimental board - dot grid | 69 |
| M031N | Amplifier, universal-, 3,5W | 38 | E002 | Experimental board - dot grid | 69 |
| M032S | Amplifier, universal-, 12W „Plug & Play“ | 39 | E010 | Experimental board - punched raster | 69 |
| M033 | Amplifier, universal-, 18W | 39 | E003 | Experimental board - strip grid | 69 |
| B199 | Antenna amplifier, approx. 50...1000MHz | 24 | E005 | Experimental board - strip grid | 69 |
| B099 | Antenna amplifier, special-, 30...850MHz | 12 | E012 | Experimental board - strip grid | 69 |
| M100N | Anti marten device for motor vehicles, 11...15V= | 47 | E013 | Experimental board with 3 strip raster | 69 |
| B189 | Anti-flea-generator | 22 | E011 | Experimental board with strip raster | 69 |
| B092 | Aternating flasher, LED-, 6...12V= | 11 | | F | |
| B108 | Atomium, 9V= | 14 | B204 | Flash-LED 230V~ | 26 |
| M019 | Automatic light switch, 230V~ | 37 | M080 | Flasher / alternating flasher for small glow lamps 6...12V= | 45 |
| | | | M008 | Flasher 230V~ | 35 |
| | | | M077 | Flasher, 5...12V=, max. 1A | 45 |
| | | | B185 | Flasher, 6...12V=, max. 100mA | 21 |
| M148A | Battery guard, (Accu saver), 12V= | 58 | M079 | Flasher, alternating- / flasher, for 1 to 10 LED's | 45 |
| A001 | Bending device | 71 | B003 | Flasher, alternating-, for 2 small lamps, 6...16V=, max. 300mA | 2 |
| | | | M082 | Flasher, DC-, 12...24V=, max. 8A | 46 |
| | | | B186 | Flasher, Jumbo LED-, 6...12V= | 21 |
| | | | FG008N | Flasher, slow, 230V~ | 61 |
| M068 | Card switch, electronic, 9V= | 44 | M114N | Flasher, slow, 240V~/110V~ | 52 |
| G050 | Case feet, black, large | 71 | B060 | Fluorescent lamp voltage transformer | 7 |
| G030 | Case feet, black, small | 71 | B100 | FM receiver, 9V= | 13 |
| M121 | CCD-camera-dummy | 54 | B156 | FM receiver, 9V=, 108...132MHz | 19 |
| M149 | Charging controller, solar- 12V= 6A | 58 | M143 | FM test transmitter, 88...108MHz | 57 |
| M083 | Charging regulator, Accu-, 12V= | 46 | B015 | Fog horn, 5W, 4.5...12V= | 3 |
| B235 | Christmas tree, 9V= | 31 | | G | |
| B123 | Combination kit: Light barrier/heat switch/twilight switch, 12V= | 16 | B051 | Gas sensor - Spirits tester, 12V= | 6 |
| B240 | Computer laser show | 32 | | H | |
| M104 | Computer switch, 4-Channel | 49 | M065 | Halogen music light for 12V~ lamps | 43 |
| L100 | Conductive silver | 70 | B123 | Heat switch-/light barrier-/twilight switch-/combination kit, 12V= | 16 |
| M142 | Constant current, LED-, 4...30V= | 57 | M128 | HF-Detector (Mini Spy Finder) | 55 |
| B162 | Continuity tester with piezo buzzer | 19 | FG015 | High power ultrasonic generator | 62 |
| B119 | Converter approx. 100...200MHz | 15 | M062 | High-voltage generator, Mini-fence-, 9...12V= | 43 |
| M038N | Converter from 24V= > 12V= (13.8V=) | 39 | B015 | Horn, fog-, 5W | 3 |
| M150 | Converter, DC- and pulse- | 58 | B188 | Horn, mini signal-, 6...12V= | 22 |
| M029 | Converter, voltage-, in: 6...14V=, out: 11...26V= | 38 | | I | |
| Ä100 | Corrosive | 70 | M144 | Impulse switch-lock control | 57 |
| Ä200 | Corrosive set, complete | 70 | M085 | Infrared detector, 9V= | 46 |
| M046 | Cross-over network 2-ways, 4...80hm, max. 120W | 41 | B195 | Infrared detector, 9V= | 24 |
| M045 | Cross-over network 3-ways, max. 120W | 40 | B216N | Infrared light barrier 5m | 29 |
| | | | M116 | Infrared light barrier approx. 30m | 53 |
| | | | B213 | Infrared light barrier max. 50m | 28 |
| M150 | DC and pulse converter | 58 | B215 | Infrared light barrier, mini-, 10cm, 6...12V= | 28 |
| M082 | DC-Flasher, 12...24V=, max. 8A | 46 | B062 | Infrared light barrier, range over 18m | 8 |
| M107 | DC-motor-interface | 49 | B241 | Infrared remote control, 10-channel | 33 |
| M101A | Descaler with power supply, 6...15V= | 48 | B223 | Infrared spotlight, 12...14V= | 29 |
| M101 | Descaler against calcification and corrosion in water pipes | 48 | M120 | Infrared spotlight, 12...15V= for CCD-cameras | 54 |
| B212 | Descaler against calcification and corrosion in water pipes | 27 | B232 | Infrared stopwatch | 31 |
| M115N | Defence, marten-, for motor vehicles, 12...15V= | 53 | M108 | Interface switch, 4-fold | 50 |
| B081 | Deftness game, 9...12V= | 10 | M106 | Interface, Stepper motor 4 pin | 49 |
| B052 | Destroyer siren | 6 | B137N | Ion generator, 12V= | 18 |
| M128 | Detector, HF-, (Mini Spy finder) | 55 | | J | |
| M085 | Detector, Infrared-, 9V= | 46 | B186 | Jumbo LED Flasher 6...12V= | 21 |
| B195 | Detector, infrared-, 9V= | 24 | | | |
| E100 | Developer | 70 | | | |
| B093 | Dice, electronic-, 6V= | 11 | | | |
| B063 | Digital number lock with keyboard, 6V= | 8 | | | |

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| M126N | Key, electronic, 12V= | 55 | P1089B | Neon lamp Blue | 7 |
| | | | P1089G | Neon lamp Green | 7 |
| | | | P1089R | Neon lamp Red | 7 |
| | | | B063 | Number lock, digital, 6V= | 8 |
| | | | B037 | Number lock, sensor-, 12V= | 5 |
| | | | O | | |
| | | | M168 | Overvoltage protection 12V | 60 |
| | | | P | | |
| | | | B085 | Parabolic-microphone, 9V= | 10 |
| | | | B181 | Paralyser 10.000V, 9V= | 20 |
| | | | M091N | Phase Coupler for Power Line Products | 47 |
| | | | M160 | Phase section regulator 110...240V~ | 59 |
| | | | F001 | Photopositive-coated board | 69 |
| | | | L010 | Piezo loudspeaker, ultrasonic- | 63 |
| | | | L001 | Piezo-spherical cap-tweeter with flare | 63 |
| | | | L003 | Piezo-tweeter | 63 |
| | | | P5123 | Piezo, electric-tweeter, mini- | 63 |
| | | | W001 | Plastic forceps | 70 |
| | | | E001 | Platine FR3 | 69 |
| | | | K001 | Plug-in axle with button | 68 |
| | | | M015N | Potential transformer, max. 1.5A, input 6...28V=, output 3...15V= | 36 |
| | | | M034 | Power amplifier, 40W | 39 |
| | | | M161 | Power cannon, ultrasonic-, 12...14, 4V= | 60 |
| | | | FG002N | Power control (Dimmer) 230V~ | 61 |
| | | | M028 | Power control 110...240V~ 2600VA | 37 |
| | | | M028N | Power control 110...240V~ 4000VA | 38 |
| | | | B184 | Power supply 0...12V=, max. 0.8A | 21 |
| | | | B203 | Power supply 1.2...18V= | 25 |
| | | | M039 | Power supply approx. 1.2...30V=, 2A | 40 |
| | | | B102 | Power supply, approx. 1,2...30V, max. 2A | 13 |
| | | | B126 | Power supply, approx. 1,2...30V=, max. 5A | 17 |
| | | | B073 | Preamplifier, universal-, 12...30V= | 9 |
| | | | M040 | Preamplifier, universal-, 9...24V= | 40 |
| | | | B133 | Precision timer, 12V= | 17 |
| | | | B214 | Proximity sensor, ultrasonic-, 9...12V= | 28 |
| | | | R | | |
| | | | M155 | Racing packs, discharger for 7,2V | 59 |
| | | | M152 | Rain sensor, 12V= | 58 |
| | | | B100 | Receiver, FM-, 9V= | 13 |
| | | | B156 | Receiver, FM-, 9V=, 108...132MHz | 19 |
| | | | K002 | Reflector mirror | 70 |
| | | | M160 | Regulator, phase section-, 110...240V~ | 59 |
| | | | B210 | Relay board, 8-channel-, 12V= | 27 |
| | | | B197 | Relay card, 12V= | 24 |
| | | | M125 | Relay module 8-channel | 54 |
| | | | B241 | Remote control, infrared-, 10-channel | 33 |
| | | | B243 | Repellent, marten and vermin-, 12V= | 33 |
| | | | M071N | Repellent, ultrasonic vermin-, 12V= | 44 |
| | | | M094 | Repeller, marten-, 12...15V= | 47 |
| | | | W100 | Resistance timer / color code | 71 |
| | | | B107 | Robot voice, 9...12V= | 14 |
| | | | B089 | Running light, 10-Channel, 230V~ + 9V= | 11 |
| | | | B201 | Running light 10 channels 12V= | 25 |
| | | | M011N | Running light, 230V~, 4-channel | 35 |
| | | | FG010 | Running light, 3-Channel 230V~ | 61 |
| | | | B097 | Running light, 4-Channel, 230V~ + 12V= | 12 |
| | | | L | | |
| M012 | Lamp and motor controller, 240V~/110V~ | 36 | | | |
| L005 | Laser module for B224, B240, M133 | 30 | | | |
| B224 | Laser show, 6V= | 30 | | | |
| M058N | Leakage tester, microwave-, 9V= | 42 | | | |
| B233 | LED emergency light 6...15V=~/~ | 31 | | | |
| B186 | LED flasher, jumbo-, 6...12V= | 21 | | | |
| B202 | LED running light -10 channels- | 25 | | | |
| B209 | LED series printed circuit board 230V~ | 26 | | | |
| M087 | LED tester, 9V= battery | 47 | | | |
| B092 | LED-alternating flasher, 6...12V= | 11 | | | |
| M142 | LED-constant current, 4...30V= | 57 | | | |
| M136 | LED-Signal lamp red, 12V= | 56 | | | |
| M137 | LED-Signal lamp, green 12V= | 56 | | | |
| M138 | LED-Signal lamp, yellow 12V= | 56 | | | |
| B124 | LED-volume indicator, stereo, 2 x 11 LED's | 16 | | | |
| M167 | Level indicator for water tanks | 60 | | | |
| B194 | Light barrier | 23 | | | |
| M135 | Light barrier 4m, 12V= | 56 | | | |
| B123 | Light barrier-/heat switch-/twilight switch-/ combination kit, 12V= | 16 | | | |
| B045 | Light barrier, 12V= | 6 | | | |
| B232Z | Light barrier, additional, for infrared stopwatch | 31 | | | |
| B216N | Light barrier, infrared-, 5m | 29 | | | |
| M116 | Light barrier, infrared-, approx. 30m | 53 | | | |
| B213 | Light barrier, infrared-, max. 50m | 28 | | | |
| B062 | Light barrier, infrared-, range over 18m | 8 | | | |
| B215 | Light barrier, mini-infrared-, 10cm | 28 | | | |
| M009 | Light flasher 230V~ | 35 | | | |
| M124 | Light sweller 12V=, max. 24W | 54 | | | |
| M019 | Light switch, automatic-, 230V~, 1 sec. to 15 min. | 37 | | | |
| B022 | Lighting console, 6-channel, 220...240V~ | 3 | | | |
| B069 | Listening stethoscope, 9V= | 9 | | | |
| M016 | Loudspeaker separating filter, 3-way, max. 120W | 37 | | | |
| L006 | Loudspeaker, small | 63 | | | |
| L002 | Loudspeaker, ultrasonic wall-, | 63 | | | |
| B206 | Luminous letter control | 26 | | | |
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| | | | M | | |
| B095 | Marine diesel, 12V= | 12 | | | |
| B243 | Marten and vermin repellent, 12...16V= | 33 | | | |
| M115N | Marten defence for motor vehicles, 12V= | 53 | | | |
| M100N | Marten device, anti-, 11...15V= | 47 | | | |
| FG014 | Marten repellent tester | 62 | | | |
| M094 | Marten repeller, 12...15V= | 47 | | | |
| M111 | Marten shock for motor vehicles | 52 | | | |
| B077 | Martin siren - german police siren 12V= max. 15W | 9 | | | |
| M103 | Master-slave 230V~ | 48 | | | |
| M119 | Master-slave, 6...30V= | 53 | | | |
| M141 | Melody generator 5W | 57 | | | |
| B237 | Melody generator, 6 Melodies | 32 | | | |
| B055 | Metal searching device, 9V= | 7 | | | |
| P5341 | Micro-stepper motor „oval“ | 51 | | | |
| P5342 | Micro-stepper motor „rectangular“ | 51 | | | |
| B085 | Microphone, parabolic-, 9V= | 10 | | | |
| M058N | Microwave leakage tester, 9V= | 42 | | | |
| B190 | Mini alarm system | 22 | | | |
| B188 | Mini signal horn, 6...12V= | 22 | | | |
| P5113 | Mini-stepper motor „Siemens 1BC 2720-68N“ | 51 | | | |
| P5339 | Mini stepper motor „42SPM-24DJA“ | 51 | | | |
| P5337 | Mini stepper motor „AEG S021/24“ | 51 | | | |
| P5110 | Mini stepper motor „RDM37“ | 51 | | | |
| B191 | Mini timer 9V= | 23 | | | |
| B088 | Mini traffic light | 10 | | | |
| M062 | Mini-fence-high-voltage-generator, 9...12V= | 43 | | | |
| B215 | Mini-infrared light barrier, 10cm | 28 | | | |
| P5123 | Mini-piezo electric-tweeter for M094 | 63 | | | |
| B134 | Mono sound controller | 18 | | | |
| B005 | Mosquito banisher, flea- and tick-, 9V= | 2 | | | |
| M012 | Motor and lamp control, 240V~/110V~ | 36 | | | |
| M110 | Motor driver, stepper-, 6 pin | 50 | | | |
| M106 | Motor-interface, stepper-, 4 pin | 49 | | | |
| M073 | Motorbike alarm | 45 | | | |
| M007 | Music light, 3-Channel | 35 | | | |

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| M102N | Second accumulator charger, 6...24V= | 48 | B025 | U-Stroboscope, 230V~ | 4 |
| M156 | Sensor dimmer, 230V~, 1kW | 59 | M048 | Ultrasonic generator, 12...15V= | 41 |
| B037 | Sensor number lock, 12V= | 5 | FG015 | Ultrasonic generator, High power | 62 |
| B193 | Sensor switch 9V= | 23 | L010 | Ultrasonic piezo loudspeaker | 63 |
| B011 | Sensor touch switch | 2 | M161 | Ultrasonic power cannon, 12...14.4V= | 60 |
| M152 | Sensor, rain-, 12V= | 58 | L002 | Ultrasonic wall loudspeaker | 63 |
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| B120 | Ship super diesel, 6...12V= | 15 | M071N | Ultrasonic, repellent, vermin-, 12V= | 44 |
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| B187 | Signal-Injector (test signal generator) | 22 | M032S | Universal amplifier 12W „Plug & Play“ | 39 |
| B104 | Siren, ship-, 6...12V= | 13 | M032 | Universal amplifier, 12W | 38 |
| M119 | Slave, master-, 6...30V= | 53 | M033 | Universal amplifier, 18W | 39 |
| B217 | Smoke alarm 12V= | 29 | M031N | Universal amplifier, 3,5W | 38 |
| M139 | Solar cell, approx. 0,6V= | 56 | M060 | Universal car noise filter | 42 |
| M149 | Solar charging controller, 12V=, 6A | 58 | M040 | Universal preamplifier, 9...24V= | 40 |
| M174 | Solar charging regulator Dual 16 A | 60 | V | | |
| M043 | Solar discharge protection module | 40 | B243 | Vermin and marten repellent, 12V= | 33 |
| P046 | Solar motor for M139 Solar cell | 57 | M071N | Vermin repellent, ultrasonic-, 12V= | 44 |
| B099 | Special antenna amplifier, 30...850MHz | 12 | M029 | Voltage converter, in: 6...14V=, out: 11...26V= | 38 |
| B180 | Speed control for mini-drilling machines, 12...24V= | 20 | B065 | Voltage transformer, in: 6..12V=, out: 12...30V= | 8 |
| B051 | Spirits tester- gas sensor, 12V= | 6 | M020 | Voltage transformer from 24V= > 13.8V= | 37 |
| B223 | Spotlight, infrared-, 12...14V= | 29 | W | | |
| M120 | Spotlight, infrared-, 12...15V=, for CCD cameras, | 54 | L002 | Wall loudspeaker, ultrasonic | 63 |
| B207 | Steamer noise with steam whistle + steambell, 4,5... 6V= | 26 | M158 | Water switch, 9...12V= | 59 |
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| P5108 | Stepper motor „Berger RDM57“ | 51 | | | |
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| B211 | Stepper motor control, 6...12V= | 27 | | | |
| M110 | Stepper motor driver 6 pin | 50 | | | |
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| P5341 | Stepper motor, micro-, „oval“ | 51 | | | |
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| P5339 | Stepper motor, mini-, „42SPM-24DJA“ | 51 | | | |
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| B122 | Stereo amplifier | 16 | | | |
| M055 | Stereo amplifier, 3W | 41 | | | |
| B127 | Stereo decoder | 17 | | | |
| B124 | Stereo LED-volume indicator 2 x 11 LED's | 16 | | | |
| B069 | Stethoscope, listening-, 9V= | 9 | | | |
| B232 | Stopwatch, infrared- | 31 | | | |
| B025 | Stroboscope, U-, 230V~ | 4 | | | |
| M068-5 | Substitutional cards (5 pcs) for M068 electronic card switch | 44 | | | |
| T | | | | | |
| M084 | Telephone voltage protection | 46 | | | |
| M169 | Temperature switch-thermostat 12V= | 60 | | | |
| B048 | Temperature switch, 12V= | 6 | | | |
| B172 | The little electro-technician, 4,5V= | 20 | | | |
| B042 | Time switch (short) approx. 2 sec. to 5 min. 12V= | 5 | | | |
| M113N | Time switch 12...15V=, 2 sec. to 10 (~30) min. | 52 | | | |
| B191 | Timer, mini-, 9V= | 23 | | | |
| B133 | Timer, Precision-, 12V= | 17 | | | |
| M050 | Transformer control, 230V~ | 41 | | | |
| TR01 | Transformer for converter | 5 | | | |
| M015N | Transformer, potential-, max. 1,5A, input 6...28V=, output 3...15V= | 36 | | | |
| M020 | Transformer, Voltage-, from 24V= > 13,8V= for 12V= devices, max 1,1A | 37 | | | |
| B014 | Transmitter, 27MHz, 6W | 3 | | | |
| M143 | Transmitter, FM-test. 88...108MHz | 57 | | | |
| E55XX | Transponder key - GLAS - | 55 | | | |
| TK55XX | Transponder key - PLAST - | 55 | | | |
| K062-4 | Turning knob with grub screw for Ø 4 mm axle | 70 | | | |
| K062-6 | Turning knob with grub screw for Ø 6 mm axle | 70 | | | |
| P5123 | Tweeter for M094, mini-piezo electric | 63 | | | |
| L001 | Tweeter, cap-, piezo-spherical-, with flare | 63 | | | |
| L003 | Tweeter, piezo | 63 | | | |
| B123 | Twilight switch-/light barrier-/heat switch-/combination kit, 12V= | 16 | | | |
| M122 | Twilight switch, 12V= | 54 | | | |
| M013 | Twilight switch, 210...240V~ | 36 | | | |
| FG009 | Twin flasher lamp 230V~ | 61 | | | |

1. Amplifier and similar

| | page | |
|-------|---|----|
| B069 | Listening stethoscope, 9V= | 9 |
| B073 | Preamplifier, universal-, 12...30V= | 9 |
| B085 | Parabolic-microphone, 9V= | 10 |
| B099 | Special antenna amplifier, 30...850MHz | 12 |
| B115 | Amplifier, 8W | 15 |
| B122 | Stereo amplifier | 16 |
| B125 | Amplifier 200W | 16 |
| B134 | Mono sound controller | 18 |
| B182 | Amplifier, 1W | 21 |
| B199 | Amplifier, antenna-, approx. 50...1000MHz | 24 |
| M016 | Loudspeaker separating filter, 3-way, max. 120W | 37 |
| M031N | Universal amplifier, 3,5W | 38 |
| M032 | Universal amplifier, 12W | 38 |
| M032S | Universal amplifier 12W „Plug & Play“ | 39 |
| M033 | Universal amplifier, 18W | 39 |
| M034 | Power amplifier, 40W | 39 |
| M040 | Universal preamplifier, 9...24V= | 40 |
| M045 | Cross-over network 3-ways, max. 120W | 40 |
| M046 | Cross-over network 2-ways, 4...80hm, max. 120W | 41 |
| M055 | Stereo amplifier, 3W | 41 |

2. Power supply and similar

| | | |
|------|---|----|
| B102 | Power supply, approx. 1,2...30V=, max. 2A | 13 |
| B126 | Power supply, approx. 1,2...30V=, max. 5A | 17 |
| B184 | Power supply 0...12V=, max. 0,8A | 21 |
| B203 | Power supply 1,2...18V= | 25 |
| M039 | Power supply approx. 1,2...30V=, 2A | 40 |
| M057 | Accumulator charging module | 42 |

3. Flasher, running light and similar

| | | |
|--------|--|----|
| B003 | Alternating flasher for 2 small lamps 6...16V=, max. 300mA | 2 |
| B022 | Lighting console, 6-channel, 220...240V~ | 3 |
| B025 | U-Stroboscope, 230V~ | 4 |
| B088 | Mini traffic light | 10 |
| B089 | 10-Channel running light 230V~ + 9V= | 11 |
| B092 | Alternating flasher, LED-, 6...12V= | 11 |
| B097 | 4-Channel running light 230V~ + 12V= | 12 |
| B108 | Atomium, 9V= | 14 |
| B124 | Stereo LED-volume indicator 2 x 11 LED's | 16 |
| B185 | Flasher, 6...12V=, max. 100mA | 21 |
| B186 | Jumbo LED Flasher 6...12V= | 21 |
| B201 | Running light 10 channels 12V= | 25 |
| B202 | LED running light -10 channels- | 25 |
| B204 | Flash-LED 230V~ | 26 |
| B209 | LED series printed circuit board 230V~ | 26 |
| B235 | Christmas tree, 9V= | 31 |
| FG008N | Flasher, slow, 230V~ | 61 |
| FG009 | Twin flasher lamp 230V~ | 61 |
| FG010 | 3-Channel running light 230V~ | 61 |
| FG011 | Alarm flasher 230V~ | 61 |
| M007 | 3-Channel music light | 35 |
| M008 | Flasher 230V~ | 35 |
| M009 | Light flasher 230V~ | 35 |
| M011N | Running light, 230V~, 4-channel | 35 |
| M065 | Halogen music light for 12V~ lamps | 43 |
| M077 | Flasher 5...12V=, max. 1A | 45 |
| M079 | Flasher /alternating flasher/ for 1 to 10 LED's at max. 6...12V= | 45 |
| M080 | Flasher / alternating flasher for small glow lamps 6...12V= | 45 |
| M082 | DC-Flasher, 12...24V=, max. 8A | 46 |
| M114N | Flasher, slow, 240V~/110V~ | 52 |

4. Voltage-transformer and similar

| | | |
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| B007 | Electrostat apparatus, 9...12V= | 2 |
| B060 | Fluorescent lamp voltage transformer | 7 |
| B065 | Voltage transformer | 8 |
| B152 | Electronic fence appliance | 19 |
| M015N | Potential transformer, max. 1,5A, input 6...28V=, output 3...15V= | 36 |
| M020 | Voltage transformer from 24V= > 13,8V= | 37 |
| M029 | Voltage converter, in: 6...14V=, out: 11...26V= | 38 |
| M038N | Converter from 24V= > 12V= (13,8V=) | 39 |
| M062 | Mini-fence-high-voltage-generator, 9...12V= | 43 |

5. Receiver, transmitter and similar

| | | page |
|------|-------------------------------------|------|
| B014 | Transmitter 27Mhz 6W | 3 |
| B100 | FM receiver, 9V= | 13 |
| B119 | Converter approx. 100...200MHz | 15 |
| B156 | FM receiver, 9V=, 108...132MHz | 19 |
| B241 | Infrared remote control, 10-channel | 33 |
| M128 | HF-Detector (Mini Spy Finder) | 55 |
| M143 | FM test transmitter, 88...108MHz | 57 |

6. Sirens, sound generator and similar

| | | |
|-------|--|----|
| B005 | Mosquito banisher, flea- and tick-, 9V= | 2 |
| B015 | Fog horn, 5W, 4,5...12V= | 3 |
| B052 | Destroyer siren | 6 |
| B077 | Martin siren - german police siren 12V= max. 15W | 9 |
| B095 | Marine diesel, 12V= | 12 |
| B104 | Ship siren, 6...12V= | 13 |
| B120 | Ship super diesel, 6...12V= | 15 |
| B146 | Electronic melody "Coo Coo Waltz" | 18 |
| B155 | Electronic dog barking | 19 |
| B162 | Continuity tester with piezo buzzer | 19 |
| B187 | Signal-Injector (test signal generator) | 22 |
| B188 | Mini signal horn, 6...12V= | 22 |
| B189 | Anti-flea-generator | 22 |
| B207 | Steamer noise with steam whistle + steambell, 4,5... 6V= | 26 |
| B214 | Proximity sensor, ultrasonic-, 9...12V= | 28 |
| B237 | 6-Melody generator | 32 |
| B243 | Marten and vermin repellent, 12...16V= | 33 |
| M048 | Ultrasonic generator, 12...15V= | 41 |
| M067 | Electronic dog barking | 43 |
| M069 | Electronic underground rodent pest repeller | 44 |
| M071N | Vermin repellent, ultrasonic-, 12V= | 44 |
| M094 | Marten repeller, 12...15V= | 47 |
| M100N | Anti marten device for motor vehicles, 11...15V= | 47 |
| M141 | Melody generator 5W | 57 |
| FG015 | Ultrasonic generator, High power | 62 |

7. Light barriers and similar

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| B045 | Light barrier, 12V= | 6 |
| B062 | Infrared light barrier, range over 18m | 8 |
| B123 | Combination kit: Light barrier/heat switch/twilight switch, 12V= | 16 |
| B194 | Light barrier | 23 |
| B213 | Infrared light barrier max. 50m | 28 |
| B215 | Mini-infrared light barrier, 10cm | 28 |
| B216N | Infrared light barrier 5m | 29 |
| B232 | Infrared stopwatch | 31 |
| B232Z | Additional light barrier for infrared stopwatch | 31 |
| M116 | Infrared light barrier approx. 30m | 53 |
| M135 | Light barrier 4m, 12V= | 56 |
| K002 | Reflector mirror | 70 |

8. Timer, precision timer, universal interval switch and similar

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| B042 | Time switch (short) approx. 2 sec. to 5 min. 12V= | 5 |
| B133 | Precision timer, 12V= | 17 |
| B191 | Mini timer 9V= | 23 |
| M019 | Automatic light switch, 230V~ | 37 |
| M113N | Time switch 12...15V=, 2 sec. to 10 (~30) min. | 52 |
| M152 | Rain sensor, 12V= | 58 |

9. Universal alarm systems and similar

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| A004 | Alarm contact construction, white | 71 |
| B101 | Universal alarm system for car, boat, house, garden, yard | 13 |
| B190 | Mini alarm system | 22 |
| B198 | Alarm display | 24 |
| B214 | Proximity sensor, ultrasonic-, 9...12V= | 28 |
| M061 | Alarm monitor | 42 |
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9. Universal alarm systems and similar

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Kemo-Electronic GmbH
Managing Director: Klaus Kernchen
Leher Landstraße 20
D-27607 Langen - Germany

Tel. 0049 4743-93380 Fax -933822
E-Mail: Kemo-Electronic@t-online.de
<http://www.kemo-electronic.de>

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