

ELV[®] Electronics

Highlights 2003



Warmth
Comfort
Convenience
Energy-saving

**DOMESTIC
RADIO CONTROL UNIT**



Competence in electronics

www.elv.com

ELV® - Competence in Electronics

Dear business-friends,

I am glad that you found interest in the products of ELV. The available brochure just shows a small selection of our large product range.

Our 712 page big catalogue with much thousands articles from the whole world of electronics exists only in German language at the moment.

If you should have any questions concerning certain products or if you are interested in selling our products, we will be happy to supply you with more details.



Company Founder
Prof. H.-G. Redeker



ELV - The Electronic's Specialist

The three letters „ELV“ stand for a worldwide group of companies that offer a wide range of services and products. From concept and development to production, marketing and distribution - ELV offers everything.

Our customers have confidence in ELV because of our competence, creativity and absolute reliability as well as our diligent attention to high quality standards.

Research and Development

From concept to the finished production series, our engineers and technicians develop about 100 new products a year. They are supported by the most modern computer techniques, using the most up to date CAD systems.

Line of products

Consumer electronics: ELV offers it's customers one of the widest ranges of electronics with over 10,000 different articles.

Professional industrial electronics: Another one of our strong points is in the area of professional measuring equipment. ELV is one of the most important european agents for the sale of EMC measuring equipment. ELV also has it's own Compact Diagnostisic Chamber with ferrite absorbers, which enables us to perform Full-Compliance-Measurements for CE certification in the anechoic chamber. ELV also offers, on a regular basis, seminars on the subject of EMC.

Production

Approximately 1,000 different ELV devices are being produced in our own production or in cooperation with other manufacturers, in Germany for Far East and all over the world. Stringent tests of the finished products in our quality control department ensure a safe and long term use.

Order/Delivery

A completely computerized storage consignment and dispatch system, that works without any sort of printed order sheets, ensures that any incoming orders can be processed and made ready for delivery in only 15 minutes. It is one of the most modern in Europe. It can manage approximately 20,000 different articles in the consignment hall and at the same time manage 4,000 pallet positions in the nearby main warehouse. This allows a 98 % delivery verification.

Magazine for Electronics

The „ELVjournal“ is a bi-monthly electronics magazine that has the largest circulation for a magazine of it's kind in Germany. It is published by our own publishing house which was founded in 1978. Worldwide it takes it's place among the best when it comes to detailed descriptions of electronics and electronic equipment.

Radio-controlled radiator thermostat FHT 8

Pleasant warmth and energy saving

A new type of radio-controlled radiator thermostat system for the convenient, completely cable-free control of up to 8 radiator actuators per room. With individually programmable daily/weekly program for radiator control in accordance with your personal wishes and habits. The saving in energy costs resulting from this is enormous!

- Max. warmth – Min energy consumption
- Thermostat is separate from the actuator, control is therefore based on the actual room temperature (measured in the room, not at the radiator!)
- No mains electricity or cable -> simple installation
- Controls up to 8 radiators per room
- Individually programmable daily/weekly program
- Easy to use thanks to clear menu guidance
- Ready for immediate use – standard values pre-programmed
- Thermostat with transducer – can be removed by means of quick-release fastener for convenient programming
- Modern design with large display, convenient operation using jog dial
- High functional reliability due to radio transmission in the particularly reliable 868 MHz band
- Battery operation – no mains connection required!
- Simply replace the old valve head with the actuator – in next to no time!
- Suitable for all common radiator valves
- Holiday/party function for temporary temperature changes

- Weekly maintenance function to prevent valve calcification
- Frost protection function – prevents the heating from freezing up
- Emergency operation by hand possible

Caution!

Not compatible with underfloor heating systems.

Set:

- 1 Controller • 1 Actuator with adapter set • 1 Set of batteries

Order no.: 17-467-55



Actuator, single (incl. batteries and adapter)
Order no.: 17-463-37



The FHT 8 radio-controlled radiator thermostat differs from its big brother, the FHT 8b, only in that it is unable to communicate with the domestic radio control unit. The way of working and the functional scope are identical! The actuator, which is part of the system, is also identical.



Wellness & Security at Home

FHZ 1000

Domestic radio control centre

for electronic radiator thermostats and remote switching systems

Convenience and the personal feed-good factor with simple radio systems installed without cables. **Save energy and money at the same time!**

The new FHZ 1000 Domestic Radio Control Unit from ELV takes care of the individual control of room temperature for up to 15 rooms. It communicates by radio with the individual room thermostats, which in turn control the electronic actuator by radio.

The FHZ 1000 can also control components of the FS 20 radio remote switching system. In this way, lamps, sun-blinds, venetian blinds, household implements etc. can be conveniently switched on and off by radio. Controlled on a timer, at the press of a button, by telephone or ... however you want.

In just a short time you will recover the low purchasing cost through the saving in energy.

– Modern energy management = efficient use of energy with a gain in convenience.
– Individual warmth and comfort - when and where they are needed.

– Freely programmable macro functions for lighting, heating or control scenarios incl. simulated occupancy to protect against burglary.

– Visual/audible warning in the case of faults and alarms with transmission by telephone dialing unit (option), e.g. to your mobile.

– Remotely controllable by telephone (option)

– Easy to use – clear user guidance, large illuminated display. Messages in plain text, free choice of name for each device to be controlled

– Bi-directional radio communication in the interference-free 868 MHz range

– Operated by mains power supply with additional 9V block battery for convenient mobile programming.

– Central unit also works as an individual room controller in the room in which it is situated.

– Anyone can do it: Operation and installation in just a few minutes without specialist knowledge.

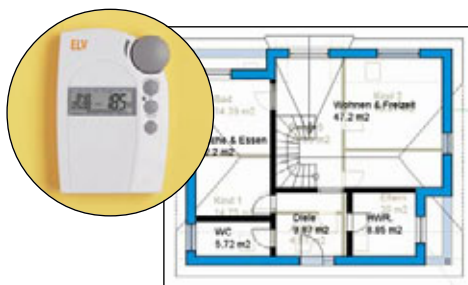
– **Unparalleled price-performance ratio**

Saver set FHZ 1000 Domestic Radio Control Unit incl. 1 actuator

Order no.: 17-478-51



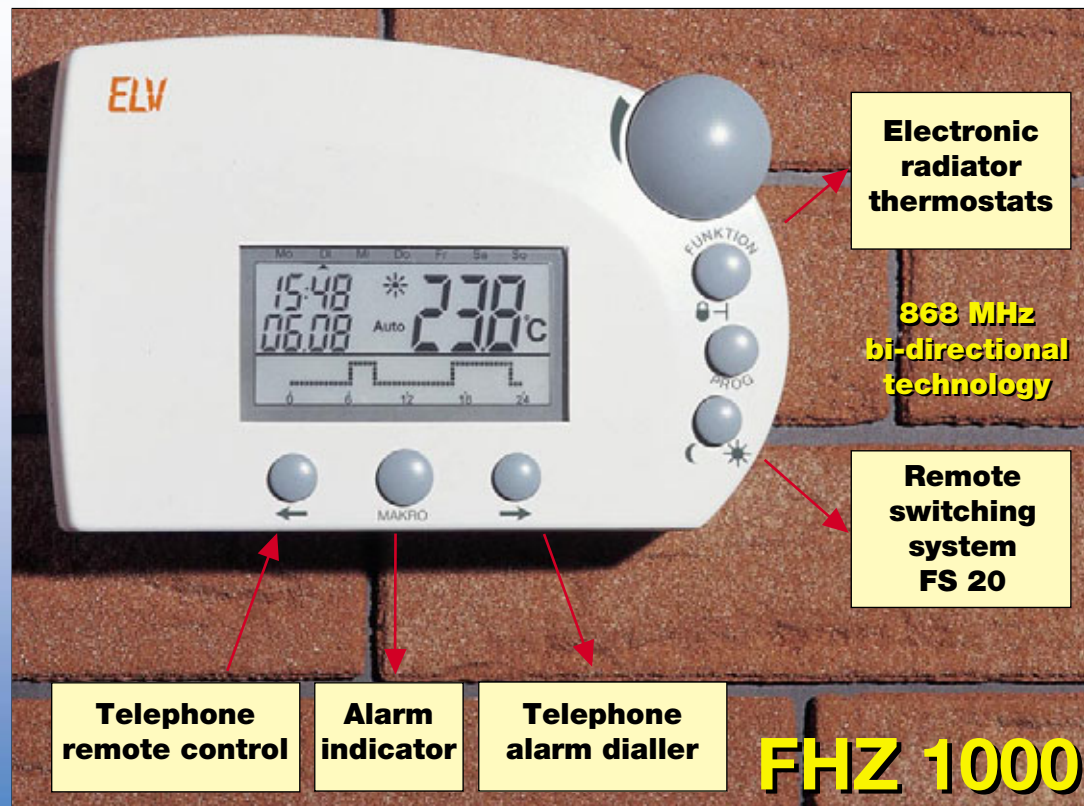
Electronic actuator with radio control



Central control of radiators in up to 15 different rooms



Central control of FS 20 remote switching components for lighting, venetian blinds, household implements etc.



Domestic radio control unit FHZ 1000

Controls the whole heating, lighting and equipment system in your house! The central control unit can control up to 15 FHT 8b room controllers and up to 15 components of the FS20 system, e.g. the FS 20 ST radio switch.

With 4 macro control programmes, complete control scenarios can be programmed over the whole system, e.g. simultaneous starting of the heating, switching on of the outside lights and coffee machine and lowering the venetian blinds.

The control program can be configured individually for each device and a name can be assigned in plain text (10 characters) for each device and each macro – an easy overview for each!

If required, the central control unit can be controlled remotely by means of the telephone radio remote control.

Faults and alarm conditions, e.g. a failure of the heating, can be forwarded to any telephone using the telephone dialling unit.

Power is supplied by a mains power supply and a 9V block battery. For mains operation, the power is supplied via the wall holder; the central control unit can be removed for easy programming.

Programmed data are permanently stored even in the case of power and battery failure.

In conjunction with the radio actuator, the central control unit directly controls the temperature in the room in which it is situated (up to 8 actuators can be controlled).

For controlling the temperature in the other rooms, the central control unit communicates bi-directionally with the FHT 8b room controllers.

Particularly easy to use thanks to the jog dial and illuminated display.

Order no.: 17-478-51



Room controller FHT 8b

The FHT 8b room controller is based on the proven stand-alone FHT 8 individual room controller (full description see Page 3). The simple control concept and the extensive functionality have been adopted from this.

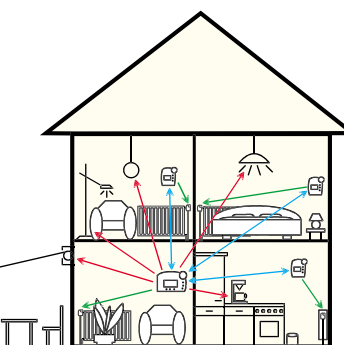
- Thermostat is separate from the actuator, actual room temperature is therefore measured in the room instead of at the radiator
- Controls up to 8 radiators in the room
- Battery operation - no mains connection required
- Individually programmable daily/weekly program
- Modern design with large display, convenient operation using jog dial
- Holiday/party function for temporary temperature changes
- Weekly maintenance function to prevent valve calcification
- Frost protection function – prevents the heating from freezing up
- Emergency operation of the actuator by hand possible

The FHT 8b room controller can also communicate by radio with the FHZ 1000 central control unit by equipping it with an additional radio receiver. In this way, changes to the temperature settings or to the time program can be made not only directly at the unit

but also from the central controller. At the same time, an exchange of data takes place between the central control unit and the room controller so that the same data are stored in both units. The room controller reports its status to the central control unit at short intervals, e.g. battery condition or faults. In this way, the state of all room heaters can be overviewed centrally.

Room controller FHT 8b
Order no.: 17-479-58

Radio actuator
Order no.: 17-479-59



Radio actuator

Simply replace the existing thermostatic head with the radio actuator in next to no time! Battery actuator and radio controller – no laying of cables or mains connection necessary. The adapter provided enables the unit to be fitted to the most common radiator valves. Control by radio from FHT 8b or FHZ 1000.

Order no.: 17-479-59



Radio switch FS 20 ST

Socket radio switch for control with FHZ 1000. Switches electrical equipment with power consumptions up to 3680 VA (230 V AC).

Order no.: 17-386-69



Telephone radio remote control FS20 TS

For the remote control of the FHZ 1000 using a touch-tone telephone. Passes on incoming control commands by radio to the FHZ 1000. For analogue telephone lines (TAE-F plug), needs assignment of a telephone number

Order no.: 17-473-47



Radio telephone dialling unit

Under control of the central control unit, dials up to 3 pre-programmed numbers (max. 22 digits), for example to inform your own mobile, the office or neighbours and friends tasked during your absence of the reason for activation.

Order no.: 17-520-88

Radio remote switching system FS20 868 MHz

The new radio remote switching system represents a system of radio switches, radio dimmers, remote controls and radio control devices that can be expanded in almost any way required - in many cases it makes cable installations for domestic control superfluous. Reliable signal transmission is guaranteed by the use of the most up-to-date radio components in the interference-free 868 MHz range and a system of coding.



Radio switch socket FS20 ST

A central component of the system - simply plug in between the load and the socket for convenient remote operation by radio! The switching capacity is 16 A at 230 V AC (3680 VA). With direct control button. With integral timer for use as an automatic time switch (adjustable between 1 s and 4.25 hrs).

Order no.: 17-386-69

Radio dimmer FS20 DI

For the convenient dimming of filament lamps, halogen lamps etc. with a power consumption of up to 200 VA (230 V AC) by radio!

With integral timer for use as an automatic time switch (adjustable between 1 s and 4.25 hrs) or for soft increase or decrease of the lighting level within the time set by the timer.

Other design features as FS 20 ST. Order no.: 17-386-74



Radio repeater FS20 RPT

The repeater is used for increasing the range of transmitters of the FS20 radio switching system.

Radio commands from these transmitters can be repeated up to two times so that a maximum of three times the range of the transmitted signal can be achieved.

The repeater can also be used for cleaning up critical radio path situations, e.g. in steel armoured buildings, a rugged landscape, an interference-prone environment etc.

The repeater is intended for the transmission of radio switching signals. Dimming commands cannot be transmitted or can only be transmitted to a limited extent.

The repeater is mounted in the plug/socket housing. With through-connected socket - so no sockets are "lost" in the installation.

Order no.: 17-473-75

Radio sun-blind controller FS20 MS

For the radio controlled extension and retraction of electrically operated sunblinds and roller shutters. It is simply connected between the existing wall switch and the drive motor. Extension and retraction can be performed both manually from an FS20 system remote control and under the control of an internal timer (programmable retract/extend time: 1 s to 4.25 hrs). 2 Relay contacts (2 x changeover, max. 2070 VA (230 V~/9 A)). Dimensions (W x H x D): 160 x 55 x 80 mm.

Order no.: 17-391-48

Radio timer FS20 ZE

For the remote switching of up to 4 devices or groups of devices of the FS20 radio switching system over a distance of up to 100 m.

All indications, programming operations and operator inputs are made using the battery-operated and thus mobile display and transmitting unit.

Both automatic control (up to 12 switching times (on or off) and weekly timer) and manual operation are possible from the radio timer.

A random mode can control lights arbitrarily in order to simulate occupancy (protection against burglary). With internal quartz clock.

Dimensions (W x H x D): 81 x 130 x 65 mm.

Order no.: 17-386-62



Transmission range up to 100 m

10-channel handheld transmitter FS20 S20

Convenient hand-held transmitter for the control of up to 10 functions.

With visually contrasting pairs of buttons for channels 9 and 10.

For switching on and off or dimming with each pair of buttons.

The programming of radio switch equipment timers and the addressing of the system is also possible from this remote control unit.

With inscription field for noting the button assignment on the rear.

A control lamp acknowledges that the switching command has been sent.

Dimensions (W x H x D): 55 x 152 x 18 mm.

Order no.: 17-386-42



4/8-channel hand-held receiver FS20 S8

Compact hand-held transmitter with 8 buttons for controlling 4 in/out functions with one pair of buttons each or 8 functions with one button each. Can be used for switching, dimming, programming and addressing.

Dimensions (W x H x D): 45 x 106 x 16 mm.

Order no.: 17-386-36

2-channel handheld transmitter FS20 S3

2-channel mini hand-held transmitter for the switching/dimming of equipment of the FS 20 system. Dimensions (W x H x D): 30 x 68 x 13 mm.

Order no.: 17-469-66

2/4-channel surface-mounted wall transmitter FS20 S4A

2/4-channel wall transmitter for the remote control of FS20 devices on 2 or 4 channels. Fitted simply by sticking or screwing in place.

Dimensions (W x H x D): 78 x 78 x 15 mm.

Order no.: 17-476-49

Radio dimmer FS20 DI20

For the radio controlled switching and dimming of resistive and inductive loads up to 200 VA (230 V/0.8 A) over a distance of up to 100 m (free field range). **Not suitable for electronic halogen transformers!**

With integral timer for use as an automatic time switch (adjustable between 1 s and 4.25 hrs) or for soft increase or decrease of the lighting level within the time set by the timer. No data loss on power failure.

Order no.: 17-386-55

Radio dimmer FS20 DI22

For the radio controlled switching and



dimming of halogen electronic transformers and resistive loads up to 200 VA (230 V/0.8 A). **Not suitable for conventional halogen transformers!** Works particularly silently.

Order no.: 17-391-54



Surface-mounted radio switch FS20 SA

Stationary switching receiver with two relay changeover outputs (16 A/230 V AC, 3680 VA). Operated by radio transmitter or directly at the unit. Three operating modes: Toggle, time switch (1 s - 4.25 hrs), continuously switched on or off. For outdoor use (IP 65).

Assembled device Order no.: 17-470-12

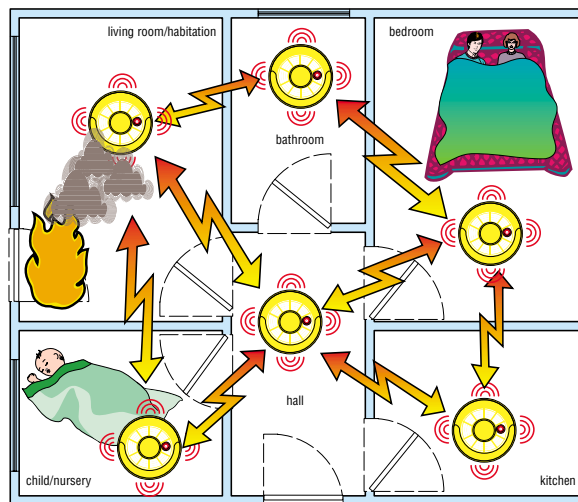


4-channel radio surface-mounted switch FS20 AS4

Stationary switching receiver with 4 separate, independently controllable switching channels (each 3680 VA (230 V/16 A), each with 1 changeover). Operated by radio transmitter or directly at the unit. Two operating modes: Time switch (1 s - 4.25 hrs), continuously switched on or off. For outdoor use (IP 65).

Order no.: 17-461-35

ELV radio smoke alarm unit may be cascade connected if required

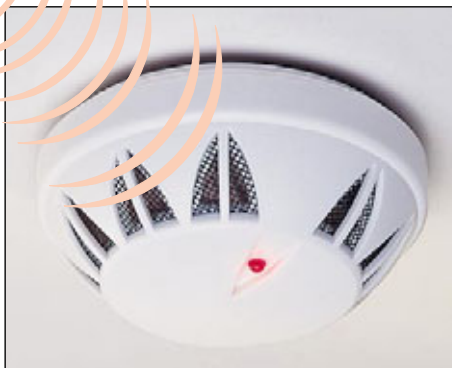


In this smoke alarm system an alarm from a smoke alarm unit is transmitted by radio to all smoke alarm units in the system, which then also emit an acoustic alarm. This means it is possible to react in good time to a distant fire, for example in another floor of the house.

The transmission of the alarm via radio means that no wiring is required and the individual smoke alarm units (according to the building material) can be separately mounted at a distance of up to 100 m (open space) from each other. In this way very large buildings and areas can be protected. The system permits the installation of as many smoke alarm units as required.

Additional features:

- Display of the active smoke alarm unit (false alarm identification)
- LowBat warning
- Codeable, prevents overlapping with other radio services
- Adjustable response sensitivity, so it can be used in spaces where smoking is permitted or with steam outlets, e.g. in kitchens.



ELV radio smoke alarm unit
Order No.: 17-471-24

Technical data:

Transmitter/receiver
frequency 433.92 MHz
Voltage supply: 3 x mignon
Current consumption 0.15 mA
Dimensions (ø x H): 115 x 50 mm

Radio Door Latch System

More than just a door latch - the new ELV radio door latch system consists of a removeable system of components and is distinguished by useful features such as time-controlled deactivation, remote control via the FS 10 remote control system and optional pager receiver, used, for example, so that you don't miss callers even when in the garden.

No more problems laying doorbell lines or retrofitting/extending door latch systems. But even small offices without a receptionist can benefit from such a door latch system; the mobile pager receiver will ensure no callers are missed even if you are not in the office area at the time. Since the sender can also be operated in a mobile way (battery power), it can also be used as an alarm transmitter, e.g. for the aged or those needing care.

The wide range of the system (up to 100 m depending on the building material) means the system can be installed in larger buildings.

Several systems (up to 8) can be operated simultaneously due to the internal addressing feature, e.g. in blocks of flats, communities, neighbourhoods or as a second bell for children etc.

2 bell transmitters

Two weatherproof bell transmitters are available, each powered by two LR 44 round cells, one with and one without a name label field. The service life of the batteries is a maximum of 10 years.

Comfortable bell

The doorbell is accommodated in an elegant housing for wall-mounting and can be installed practically anywhere since it is battery powered. If necessary, several bells can be installed within the range of the bell transmitter.

Power is supplied by 2 round cells which have a maximum service life of five years, depending on frequency of use.

The ELV radio remote control system FS 10 enables the bell to be deactivated easily, even automatically, e.g. at night. Dim. (W x H x D): 140 x 133 x 47 mm.

Pager receiver

Small pager receiver to receive acoustic/optical signals. Due to the wide range of the bell transmitter, up to 100 m (open space) the pager enables a high degree of movement. It is powered by 2 micro cells/batteries. The batteries can be recharged in the unit. Dim. (W x H x D): 48 x 74 x 18 mm.

Complete set, radio doorbell,

consisting of:
1 doorbell transmitter with name label field, 1 doorbell
Order No.: 17-420-46

Bell transmitter FG 100 TS
with name label field
Order No.: 17-387-72

Bell transmitter FG 100 T
without name label field
Order No.: 17-387-73

Doorbell FG 100 B
Order No.: 17-387-71

Pager receiver FG 100 P
Order No.: 17-387-74

Remote control FS 10 S8
For remote system switching,
Supplies incl. 2 LR 44 batteries
Order No.: 17-292-03



Door bell FG 100 B



Remote control FS 10 S8

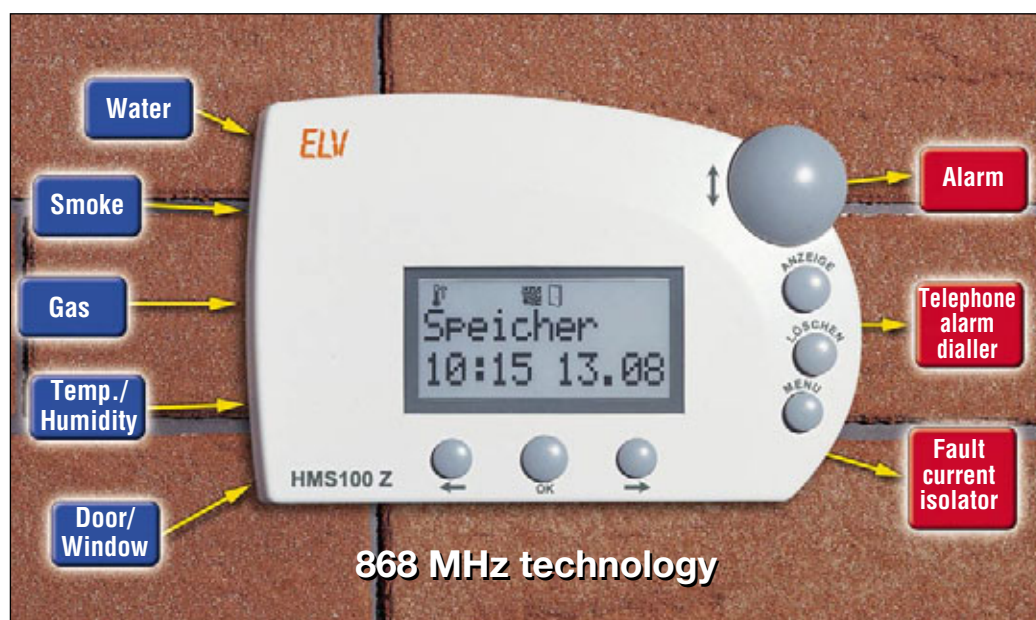


Pager receiver



Door bell transmitter FG 100 TS/FG 100 T

Domestic hazard warning system HMS 100



The new ELV domestic alarm system immediately indicates faults in all important areas of the house, gives an internal alarm and activates external alarm devices via radio. A wide range of radio sensors gives a comprehensive and convenient overview, summarised at one display location, of gas conditions, water escapes, air humidity, temperatures, outbreaks of fire and other alarm situations.

Damage that is noticed in good time can be limited in most cases - the start of a gas escape, detected immediately, cannot develop into an explosive accident.

One often only wants to know what the temperature and humidity are in the greenhouse or cellar...

The ELV HMS 100 domestic alarm system detects faults in all conceivable areas of the house, evaluates and/or indicates them and activates further alarms in accordance with individually programmed criteria.

The heart of the system is the compact central control unit, which communicates with all the other system components exclusively by radio. The large, illuminated LC display shows all the necessary data automatically or at the press of a button.

- With sensor monitoring and alarm in the case of sensor failure.
- Up to 30 sensors can be integrated into the system.
- Alarm thresholds can be programmed for temperature or humidity, for example.
- Visual/audible alarm, optional alarm via telephone dialling unit
- Tripping of the fault current isolator possible by radio, e.g. in the case of a gas alarm.

Order no.: 17-520-86

Telephone alarm dialler HMS 100 AW

Under control of the central control unit, dials up to 3 different pre-programmed numbers (max. 22 digits) in the case of a fire alarm, for example, in order to inform your own mobile, friends, neighbours, monitoring or security agencies.

- Initiation by radio from the central control unit
- Entire operation, menu-guided, from the central control unit
- Indication of the reason for activation
- Integral sabotage contact

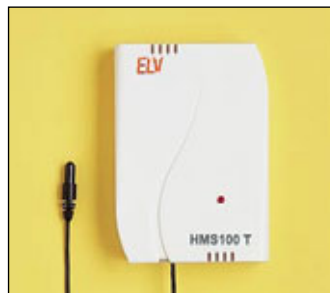
Order no.: 17-520-88



Water alarm HMS 100 W

The water alarm registers the presence of liquids on the floor above a level of just 2 mm by means of a remote sensor (approx. 1 m cable connection). The separation of the sensor and the evaluation/transmitter unit also enables the sensor to be placed in positions that are not favourable for transmitting.

Order no.: 17-520-93



Temperature sensor HMS 100 T

Versatile temperature sensor with remote, water-tight probe (approx. 1 m cable). For liquids, air and solid materials, e.g. garden soil. Detection range -30 to +70 °C.

Order no.: 17-520-92

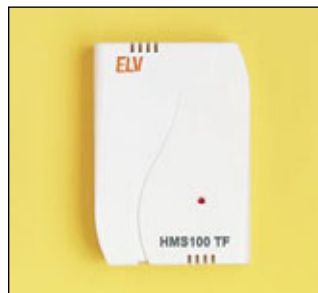


Water alarm HMS 100 WD

This water alarm combines the moisture probe and evaluation/transmitter unit in one housing. It is simply placed on the surface to be monitored.

The sensor probes are in direct contact with the floor and an alarm can thus be activated with just a small amount of moisture between the electrodes. It can be very flexible in use due to its simple mounting.

Order no.: 17-521-13



Temperature/Humidity sensor HMS 100 TF

As HMS 100 T, but additionally with humidity measurement (resolution 1%, accuracy ±8 %). Both sensors are integrated within the housing. Ideal for climate monitoring.

Order no.: 17-520-91



Smokealarm HMS 100 RM

The radio smoke alarm monitors a room for the development of smoke. Adjustable in its sensitivity so can also be used in the kitchen or smoking room. With internal, powerful signal transducer, gives a warning even when the central alarm unit is inactive.

Order no.: 17-520-94



Gas alarm HMS 100 MG/PG/CO

Gas alarms indicate the presence of gas in the vicinity of the sensor at a very early stage, well below the danger level. For three different areas of application.

HMS 100 MG (Methane/Natural gas)

Order no.: 17-520-90

HMS 100 PG (Butane/Propane)

Order no.: 17-520-89

HMS 100 CO (Carbon monoxide)

Order no.: 17-521-14



Contact alarm HMS 100 TFK

Universal alarm with permanently attached magnetic switch (door/window contact), can also be tripped from external contacts (e.g. contact output of a movement sensor).

Order no.: 17-520-95



Fault current isolator HMS 100 FIT

The fault current isolator is triggered by radio from the central control unit in the case of a gas alarm, for example, and cuts off the electricity to the house by tripping the fault current switch in the distribution box. With through-connected mains socket.

Order no.: 17-520-87

FAZ 3000

Radio alarm system

FAZ 3000 System - Main features:

- All components can be "connected" to the alarm base station without wiring of any sort.
- Long free field range of 500 m.
- High reliability via bi-directional radio links (acknowledgement of each radio message).
- Up to 100 radio sensors can be connected.
- 868 MHz technology ensures excellent protection against interference from other radio services.
- In addition 4 hard-wired alarm lines and a hard-wired sabotage line are provided.
- Long battery life of approximately 3 years.
- Wide range of components available.



FAZ 3000-TF
Order No.: 17-462-98



FAZ 3000-RM
Order No.:
17-471-25

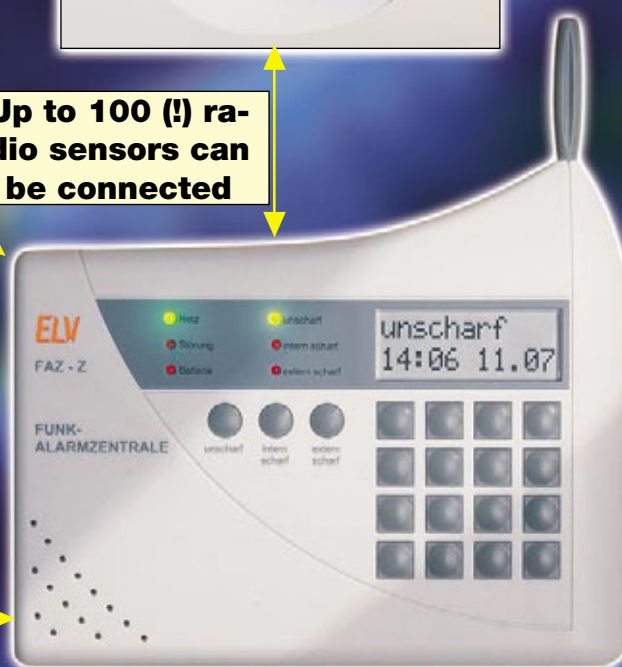


FAZ 3000-PIR
Order no.: 17-463-05

Up to 100 (!) radio sensors can be connected



FAZ 3000-SI
Order No.:
17-462-89

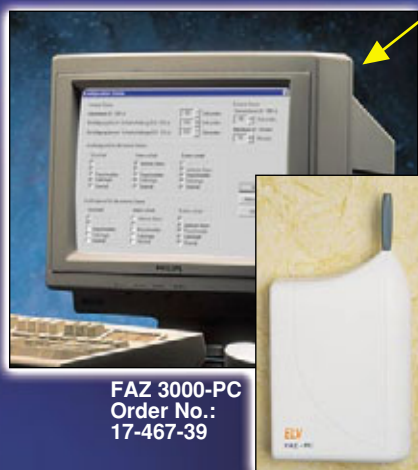


FAZ 3000-Z Order No.: 17-465-91



FAZ 3000-AW
Order No.: 17-463-10

Bi-directional



FAZ 3000-PC
Order No.:
17-467-39



FAZ 3000-SE
Order No.: 17-463-00



FAZ 3000-FB
Order No.: 17-462-96

868 MHz radio technology - bi-directional

The FAZ 3000 radio alarm system operates at 868 MHz, a frequency specially reserved for uses that require only very short data transfers, i.e. continuous signal transmitters are not permitted. This indicates a clearly increased transfer reliability, as interference by permanently operating systems such as radio headsets, etc is "postally" excluded. For the FAZ 3000, bi-directional means a signal transfer in both

directions, i.e. not only from the sensor to the alarm base station, but also from the alarm base station to the sensor. This method is especially important for acknowledging signals (and to repeat them if necessary). It is also important for power saving for sensors to receive the command "revert to power saving" when units are inactivated.

The alarm unit that "talks" to its sensors.

After a two-year development programme ELV presents its new radio alarm system designed according to the very latest technology, which leaves nothing to be desired. Special emphasis has been placed on high reliability and freedom from interference, which is the mainstay of a modern alarm system.

The new FAZ 3000 radio alarm unit is designed for burglary and fire protection for flats and houses as well as for accident and emergency alarms. It is based on the very latest microprocessors and radio technology and offers a wide range of functions with easy installation and servicing.

All components are connected by radio so installation is child's play, as there are absolutely no wires to lay between components.

Up to 100 (!) radio sensors, which can be individually provided with user-selectable names (max. 11 characters), can be connected. In the event of an alarm the base station display immediately shows where security has been breached. In addition 4 hard-wired alarm lines and a hard-wired sabotage line are provided. The FAZ 3000 can also replace current wired alarm units and the system can be expanded to almost any size required. All sensors (with the exception of the smoke alarms), the peripheral devices and the alarm base station are equipped with an integrated sabotage contact that immediately triggers an alarm on unauthorised opening of the housing. Operation of the sensors is by battery with a life of approximately 3 years. The alarm base station is fed by a plug power supply and naturally also has its own emergency power supply via batteries. An optional external DCF receiver is available to increase the accuracy of the integrated clock.

The completely new development of the FAZ 3000 radio alarm system provides a multitude of essential features.

High reliability provided by a bi-directional 868 MHz radio path.

Probably the most essential criterion of an alarm unit is the reliability and freedom from interference.

The unit must offer reliability with regard to breakdown security/availability as well as recognise an attempted break in. In this respect all FAZ 3000 system components are distinguished by an extremely mature technical design combined with a long battery life. The battery voltage is automatically checked at regular intervals and the voltage level is reported to the base station and displayed approximately four weeks before the battery expires.

For the FAZ 3000, **freedom from interference** has a greater significance. Every 10 minutes each sensor and each peripheral device reports to the alarm base station in order to indicate it is "live". This ensures that there are no faulty sensors and the radio link is func-

tioning correctly. If the radio link is interrupted for more than 90 minutes then the alarm base station issues an interference message, which does not necessarily lead to an alarm. In this way the operator can recognize possible radio interference without "arousing the

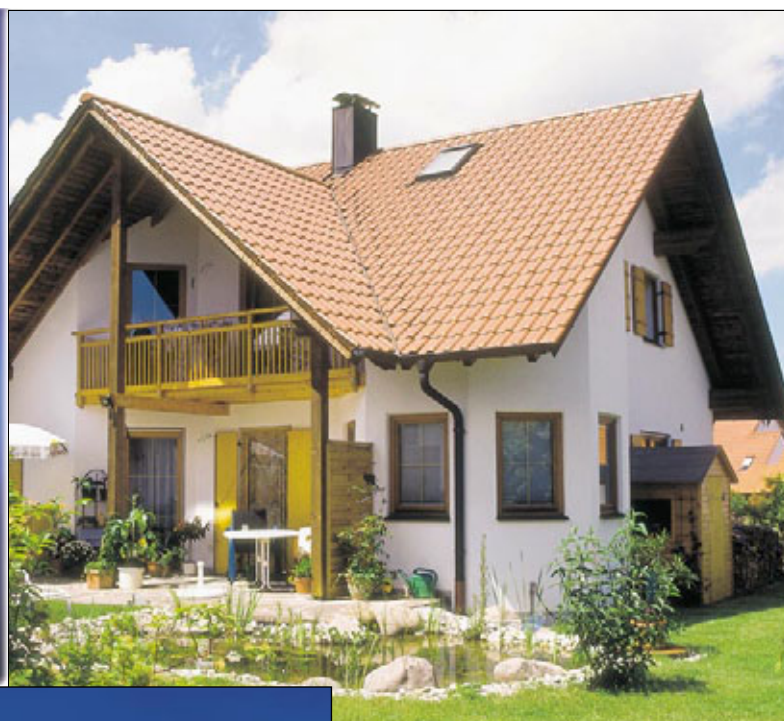


entire neighbourhood" with an alarm. Bi-directional radio technology also ensures **long battery life** even for heavily used PIR monitors. This is clearly demonstrated by the following example:

A "normal" uni-directional operating PIR monitor located in the hallway of a house does not know whether the base station is activated or inactivated. Even for inactivated units (i.e. if people are in the monitored area), the PIR monitor detects the movement and regularly activates its transmitter in order to send the information to the base station. This uses a great deal of valuable battery capacity. Not so with the FAZ 3000 bi-directional monitor! If a unit is activated it is reported to the monitors, which then go into the "standby" state. Even if people are moving around in the monitored area these sensors do not transmit alarms if a unit is in an inactivated state.

If the unit is now activated, there is by definition nobody left in the monitored area, so that the FAZ 3000 sensors that are activated do not transmit any alarms – an operational method that is especially energy conserving.

868 MHz radio technology provides excellent freedom from interference when transmitting alarm and status reports from the sensors and when com-



Almost all commercially available uni-directional radio units operate exclusively in one direction as far as the radio path is concerned i.e. in the event of an alarm, the alarm sensors send a signal to the base station, but do not know whether it has actually been received or not. This is not the case with the new ELV FAZ 3000 radio alarm system. This bi-directional system has a second radio path in the opposite direction for each sensor and peripheral device. If the PIR sensor, for example, detects an alarm, it transmits the information via radio to the base station immediately. The base station receives the information and sends an acknowledgement to the PIR sensor, which receives the acknowledgement signal and now knows for certain that the alarm has definitely been received at the base station, which now proceeds 'as instructed' (sirens switched on, telephone dialing service activated, etc). If the PIR sensor does not receive an acknowledgement signal from the base station it transmits the "alarm activation message" until the base station sends an acknowledgement back.

municating between the base station and the peripheral devices. This frequency band was chosen deliberately as no continuous signal transmitters are permitted i.e. interference caused by LPDs, radio headsets, radio loudspeakers or amateur radio transmitters are "postally" excluded.

Superhead receivers are built into all components (with the exception of the key ring remote control). Superhead receivers are distinguished by high sensitivity and narrow bandwidth, i.e. the extremely long free field range and the freedom from interference with regard to adjacent radio bands is superbly guaranteed by the use of this high quality reception technology.

Bi-directional radio links between the base station and all sensors and peripheral devices provide a high degree of security for data transfer and high resistance to interference from external influences.

Convenient start set:

FAZ 3000 start set

includes:

- FAZ 3000 radio alarm center set,
- FAZ 3000-FB radio remote control,
- FAZ 3000-TF radio door/window detector,
- FAZ 3000-PIR radio movement detector

17-466-00

Please order at the same time

8 x mignon batteries for the base station,
3 x mignon for the radio motion detector,

17-458-94

Batteries
for the radio door/window monitor
2 x micro

17-458-92

Batteries
for the radio remote control
2 x LR 44

17-101-86

The ELV Radio Weather Station Components at a Glance

Receiver Stations



WS 1000

WS 1000 B base station with large display
Order No.: 17-317-60

WS 2000

WS 2000 B base station with large display
anthracite Order No.: 17-317-52
silver Order No.: 17-481-31



WS 3000 H/WS 3000S

Available in 2 versions:
a) For wall-mounting, with brushed stainless steel panel and wooden casing.
b) Standing version, with wooden casing and blue elements.
WS 3000 H base station with illuminated, graphics-capable touch screen and remote control
a) Order No.: 17-484-63
b) Order No.: 17-484-64



WS 2200

WS 2200 B base station with large display
Order No.: 17-388-30



WS 3000 TV

WS 3000 TV base station, with TV interface and remote control
Order No.: 17-484-61



WS 2500

WS 2500 base station with touch screen display
Order No.: 17-483-35



WS 2500 PC

Incl. evaluation software on CD-ROM for Windows 95/98/NT
WS 2500 PC with PC radio interface
Order No.: 17-477-54

Radio sensors (sender)



Wind radio sensor S 2000 W

For wind direction and wind speed measurements, solar powered
Order No.: 17-291-57



Indoor radio sensor S 2000 I

With temperature and humidity sensors, battery powered
Order No.: 17-317-57

Indoor radio sensor S 2000 ID

With temperature, humidity and air pressure sensors, battery powered
Order No.: 17-317-55



Outdoor radio sensor S 2000 A

With temperature and humidity sensors, solar powered
Order No.: 17-291-73

Outdoor radio sensor AS 2000

With temperature sensor, battery powered
Order No.: 17-401-78

Outdoor radio sensor ASH 2000

With integrated temperature and humidity sensors, battery powered
Order No.: 17-401-79



Rainfall radio measuring system S 2000 R

Solar powered
Order No.: 17-291-68



Indoor/Outdoor radio temperature sensor S 2001 IA

With 1.5 m cable between sensor and electronics
Order No.: 17-355-12



Brightness sensor S 2500 H

Measuring range:
0 - 200.000 Lux

Dimensions:
sensor head: height 185 mm, diameter (max.): 53 mm
earth skewer: length 330 mm

Order No.: 17-481-84

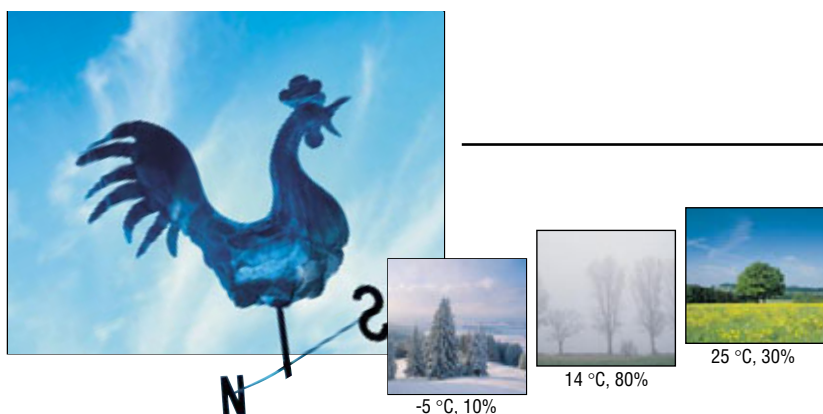
Standard 433 MHz repeater

With standard receiver, range extension up to 100 m
Order No.: 17-481-85

HQ 433 MHz repeater

With high quality receiver, range extension up to 500 m
Order No.: 17-481-86





WS 2000 - Design Radio (Dimensions 217 x 160 x 30 mm)



WS 2200 (Dimensions ø 165 x 255 mm)

Comfort Radio Weather Station WS 2000/2200

WS 2000

The WS 2000 from ELV is a completely newly designed weather station and provides almost all information about the local weather. An excellent feature of the WS 2000 is the radio transmission of all weather readings. Laborious cable connections are no longer necessary and installation is quick and easy.

The WS 2000 displays the following data simultaneously:

- indoor temperature
- indoor humidity
- outdoor temperature
- outdoor humidity
- wind speed
- wind direction
- variation of wind direction
- rainfall
- absolute air pressure
- history of air pressure over the last 24h
- air pressure tendency
- weather forecast
- radio controlled time
- date

Other features include the possibility of programming alarm values for storm and frost warning, etc. The WS 2000

can handle up to 9 external radio transmission sensors. Due to the high transmission power and sensitive receiver, the sensors can be positioned within a radius of 100 m from the WS 2000.

In addition, all outdoor sensors are powered by solar energy; switchover to battery power for sensors it is difficult to access is not required (for example wind sensor on the roof).

The indoor sensor and WS 2000 base station work economically with batteries, no external cables are required. Therefore, sensors can be positioned anywhere within the transmission range. The WS 2000 has even more convincing features, such as:

- easy operation, all measured values are displayed simultaneously on the large 160 x 83 mm, high-contrast LC display
- up to 9 indoor/outdoor temperature/humidity sensors can be managed
- the WS 2000 calculates the values for dew point and windchill temperature according to the temperature, humidity and wind speed
- minimum and maximum value of all measured values

- elegant design
- professional rainfall and wind measurement systems
- multifunctional operation: several WS 2000 receiver stations can be set up inside the transmission range, for example one in the living room, one in the kitchen, one in the office, etc.

Order No.: 17-481-32

WS 2200

This weather station, in a modern silver-blue design, can be installed as required either on a tabletop (whereby the base serves as a holder) or hung on a wall. The base and display sections (are fit together) form a harmonious unit. The features and technical data correspond to that of the WS 2000.

Order No.: 17-388-29

Overview of the radio sensors on Page 10

Specifications WS 2000/WS 2200:

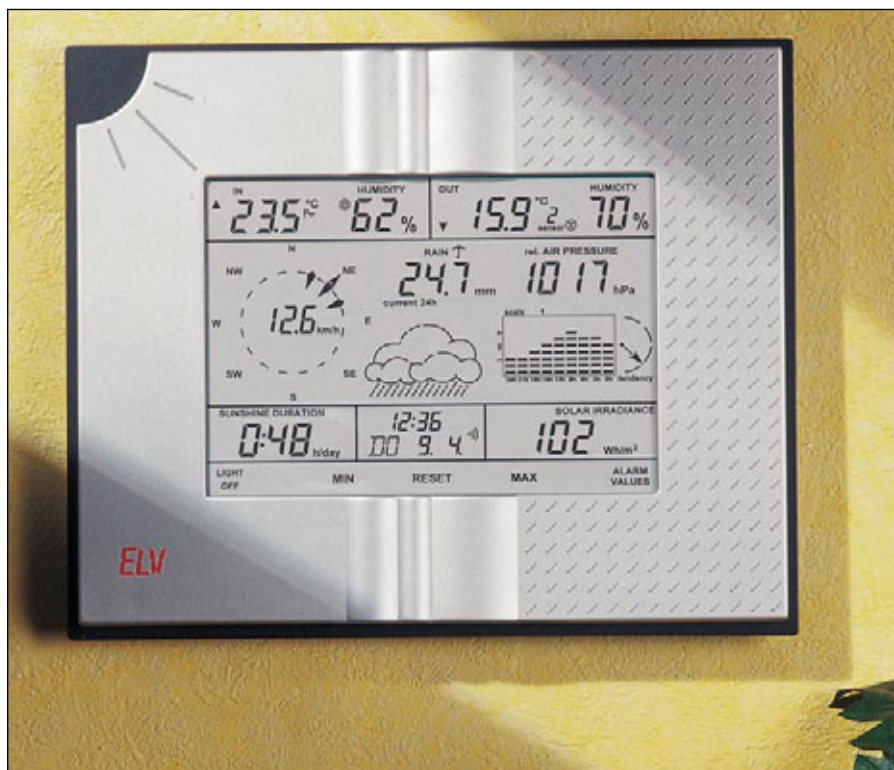
Radio transmission: 433, 92 MHz/ range up to 100m	Rainfall display: Since last reset, last 24h, last 1h
Temperature: up to 9 sensors Resolution: 0.1°C, accuracy: 1°C	Wind speed: Units: kph, mps, knots, Beaufort
Humidity: up to 9 sensors Resolution: 1%, accuracy: 8%	Resolution: 0.1km/h, Accuracy: 2%
Air pressure: 300- 1100 hPa Resolution: 1hPa	Wind direction: Graphical representati- on weather vane with 22.5° resolution, digital display in 5° steps instead of wind speed possible
Accuracy: 1hPa	Integrated clock: Radio controlled
Rainfall: 0- 999 mm Resolution: 0.5 mm	
Accuracy: 2%±1mm	

WS 2000/2200 Measurement Options at a Glance:

- Up to 9 different temperature measuring points, two of which are displayed simultaneously (indoor temperature with pressure and one of 8 further temperatures)
- Up to 9 different humidity measuring points, two of which are displayed simultaneously in the display
- Windchill equivalent temperatures
- Dewpoints are calculated separately for each new temperature/humidity sensor
- Air pressure, in hPa, or mmHg, as required
- Air pressure tendency display (steady, rising, rising sharply, falling, falling sharply)
- Graphic display of air pressure changes within the last 24 hours
- Symbol display for weather forecast (sunny, light or thick cloud, rain)
- Wind speed: selectable in kph, mps, knots or Beaufort scale
- Wind direction in the form of a windrose with display of wind direction fluctuations (instead of wind speed, wind direction can be displayed with a resolution of 5°)
- Integrated radio clock for precise time assignment to the measured values
- Storage of the minimum and maximum measured values of all sensors with recording time and date (the wind speed is displayed with the respective wind direction)
- Rainfall totals in a resolution of 0.5-mm (total, last 24 h, last 1 h)
- Programmable alarm options in the case of specific weather conditions 'e.g. possibility of frost, gale, unfavourable air pressures and temperatures - at sea or in the mountains)
- Simultaneous display of the most important weather information on a large LC display
- Data transfer per radio transmission from all measurement transmitters to the weather station
- A PC radio receiver is available on option which simultaneously receives all the measured values transmitted to the base station and transfers them to the PC. This enables detailed, long-term weather evaluation and analysis.

WS 2500

Touch screen radio weather station



NEW!

**Brightness sensor
S 2000 H
for brightness and
sunshine duration**

Innovation und design combine in the latest generation of ELV radio weather stations:
A pioneering design with a sleek aluminium appearance and new production features, such as very simple operation via a touch screen display and new displays and automatic functions, once again make the WS2500 the standard both for private and semi-professional weather observation.

Full set WS 2500 weather station consisting of:

- Base station with integrated sensors for internal temperature, internal humidity and air pressure as well as PC interface
- S 2000 A radio external sensor
- S 2000 W wind sensor
- S 2000 R radio rainfall sensor
- S 2000 H radio brightness sensor

Overview of the
radio sensors on
Page 10.

Order No.: 17-483-34

Evaluationsoftware
Order No.: 17-483-36



**Keyless,
Wireless,
Faultless**

The WS 2500 combines all relevant weather station information including progression (retraceable for up to 8 days) with a clear display; only the direct reception of satellite pictures is missing! The weather station can be expanded into a professional weather observation network using numerous sensors such as up to 8 external temperature/humidity sensors, rainfall meter, wind sensor, and brightness sensor. According to the deployment location the various sensors operate autonomously using battery or solar power, and transmit their data via radio to the weather station.

An excellent feature of the WS 2500 is the new touch screen display that makes operation of the complex weather station very simple. There are no complicated key combinations required to "fight" your way through menus; simply click on the required field and find out all you want to know about the appropriate value (current values in various interpretations, progression, extreme values with associated date and time...). The display has a total of 26 integrated "keys" that are intuitive to operate.

The display possibilities of the WS 2500 are listed in the functional overview. The giant LC display (visible surface: 157 x 111 mm) can be illuminated if necessary. According to the type of voltage supply used the illumination can be switched on for periods of up to 9:59 hours or also permanently (a power supply is included), or for 0 - 60 sec. (battery operation) without a separate power supply.

The voltage supply can be selected for completely wireless operation by battery or using the supplied power supply. For semi-professional requirements the weather station has an RS-232 interface and can therefore be used for data capture, evaluation, storage, exporting and printing of weather data on a PC (not compatible with PC WS 2000).

Naturally the WS 2500 is also equipped with an internal DCF radio clock that always displays the time, date and day of the week with a high degree of accuracy, as well as an alarm with 8 alarm times.

For the alarm, the weather station permits the input of diverse alarm values, such as exceeding a specific wind speed, danger of frost, falling below a specific air pressure (storm warning) etc. Upon reaching the defined values the weather station alerts its owner visually or audibly.

To capture the information received by radio the weather station operates fully automatically: both the exact time of reception is permanently checked and updated, as is reception of the sensor data. If one of the weather sensors located up to 100 m away (free field range; in buildings it may be less, depending on the building materials) is interrupted then the WS 2500 works tirelessly to regain contact. Even after a long period of sensor inactivity, e.g. when batteries are exhausted or there is continuous radio disturbance, the weather station automatically integrates the sensor back into the system. This also applies to new sensors in the system. Manual connection is therefore not necessary!

Wall or table mounting is possible. Supplied with power supply and integrated sensor for internal temperature/humidity and air pressure.

Overview of the radio sensors on Page 10.

**WS 2500 Weather Station
Order No.: 17-483-35**

Radio transmission: 433 MHz radio transmission with automatic, periodic sensor search and synchronisation

Base station: Internal sensors for temperature, air pressure, humidity

Temperature: Up to 8 external sensors can be connected; the internal temperature and an external temperature value for each one are displayed concurrently; resolution 0.1° C; accuracy ±1° C

Relative humidity: Up to 8 external sensors can be connected; the internal humidity and an external humidity value for each one are displayed concurrently; resolution 1 %; accuracy ±8 %

Air pressure: Absolute or relative display; measuring range 300 to 1,100 hPa; resolution 1 hPa; accuracy ±1 hPa

Air pressure tendency: Display by five arrows: rising, rising quickly, falling, falling quickly, unchanged

Rainfall: Measuring range 0 to 3,999 mm; display total since last reset; previous 24 hours or 1 hour; resolution < 0.5 mm; accuracy 2 % ± 1 mm

Sunshine duration: Numerical display; brightness threshold of 1 to 99 kLux adjustable; sun symbol for sunshine; display total since last reset; previous or current day

Brightness: Current brightness ranging from 0 to 200,000 Lux

Indicator path: Selectable display for temperature, humidity, wind speed, rainfall, air pressure, sunshine duration, brightness line diagram; retraceable for up to 24 hours or 8 days; also progression of min/max value display (wind max only)

Wind speed: Display selectable in km/h, m/s, mph, knots, Beaufort; resolution 0.1 km/h; accuracy 2 %

Wind direction: Graphical display by compass rose (resolution 22.5 degrees with display of wind direction variations; digital display (instead of wind speed) possible

Clock: Integrated DCF radio clock; 8 waking times (for one weekday or daily)

Weather forecast: by weather symbols: sun, bright, cloudy, rain

Extensive storage possibilities: Min./max. with time and date

RS-232 PC interface for data capture, evaluation, storage, exporting and printing.

Housing dimensions (W x H x D): 255 mm x 210 mm x 35 mm



Radio-controlled weather station WS 3000 S
Order No.: 17-484-64

Comfort-Weatherstation WS 3000

Displaying the weather was yesterday
- WS 3000 from ELV is today!

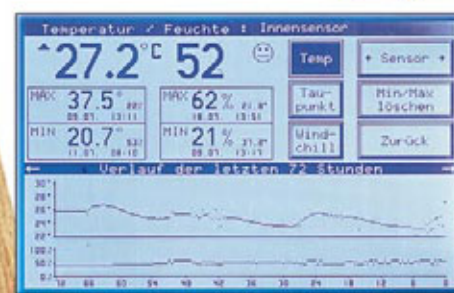
With the introduction of the weather station WS 2000 in 1998, ELV set new standards in the area of consumer weather measuring technology. The new WS 3000 represents the latest, elegant version with a touch screen which has blue back-lighting and an optional remote control, making this model the flagship of the WS series. Its unique, original design makes an immediate impression, optionally with a wooden housing and modern metallic front panel, incorporating excellent technology, no longer requiring external operating elements and with self-explanatory operation.



The large Liquid Crystal Display (LCD) simultaneously displays all the relevant weather data, which is updated at regular intervals. In addition, the viewer is informed of the time, date, weekday and expected weather tendency. The unit is no longer equipped with operating elements. Switching over to the various setting options and additional functions is made via the touch screen display, i.e. by simply pressing your finger on the relevant part of the screen, the display switches to that function immediately. The result is the simplest operation possible, the unit is self-explanatory. Alternatively, all the most important functions can be operated by means of a remote control; an extremely useful feature when taking the large, clearly read display into consideration.

The time-controlled functions of the weather station are activated and deactivated by the well-proven radio signal control DCF-77: time, weekday and date. In order that the weather data and DCF time data can be received reliably and independently of the positioning and installation site of the weather station, the receiver has been separated from the actual weather station so that it can be set up at a good reception site purely according to reception aspects.

Radio-controlled weather station WS 3000 H
Supplied with mains adapter, receiver and the 8-key remote control FS 10-S8
Order No.: 17-484-63



Thanks to the proven ELV weather sensor system in the S2000 series, the weather station can be extended to become a complex radio-controlled weather measuring system. The sensors can simultaneously „supply“ the ELV PC weather station with data, meaning that the system can be developed into a weather data compiling and statistics system.

Repeater
In order to increase the range of out weather sensors. Cascading. Range, up to 100 m respectively
Order No.: 17-481-85

Repeater HQ
With high quality receiver, cascading, range up to 500m
Order No.: 17-481-86

Overview of the radio sensors on Page 10

Specifications: Weather Station WS 3000

Display: Large area touch screen LCD (167 x 107 mm) displays all the important measured values at a glance
Radio signal transmission: 433 MHz transmission system linking to all sensors

Temperature: Up to 9 sensors can be connected, two temperature values are displayed simultaneously, resolution 0.1 °C, accuracy ± 1 °C

Relative humidity: Up to 9 sensors can be connected, two humidity values are displayed simultaneously, resolution 1%, accuracy $\pm 8\%$ (a temperature and humidity sensor are combined in each radio sensor)

Atmospheric pressure: Measuring range 300 to 1200 hPa, resolution 1 hPa, accuracy ± 1 hPa (the humidity sensor is installed with the temperature and humidity sensor in the indoor radio sensor)

Pressure tendency: Five arrows indicate increasing, rapidly increasing, falling, rapidly falling, constant

Rainfall: Measuring range 0 to 9999 mm, optional display of accumulated total (since last reset) and 24 hr. or 1 hr. rainfall. Resolution 0.5 mm, accuracy $2\% \pm 1$ mm

History for all displayed values: Display by means of graphical diagram, can be retraced up to 72 hr

Clock: Integrated DCF radio clock

Weather forecast: By means of animated weather symbols;

868 MHz
High Performance

*Knocking on
heavens door*



Radio Temperature/Humidity Sensor
ASH 2200
Order No.: 17-429-93

LCD Barometer BA 1010

Elegant Design Barometer with large, round LC display and integrated air pressure sensor

By tapping lightly on the housing, the electronic pointer moves towards the current tendency as did the good old analog barometer.

The LCD barometer BA 1010 provides modern, electronic ease of measuring without having to dispense with tapping on the barometer as in the old days.

- The absolute air pressure is displayed both numerically (300 - 1100 hPa/ resolution 1 hPa) and via an electronic pointer instrument (950 - 1050 hPa/ resolution 2 hPa) whose display moves towards the tendency after tapping lightly on the tendency.
- Additional weather symbols indicate weather developments and forecast.
- The air pressure sensor is integrated in the barometer, it is needed for the basic functions of an external sensor.
- The integrated temperature and humidity sensors determine the actual temperature and relative humidity every 30 seconds. These measured values appear clearly in the display. The data for the temperature and humidity is used to establish the factor for a comfortable room temperature. Three "Smilies" symbols represent the conditions "dry", "fine" and "wet".
- In addition, an outdoor sensor can be connected and installed up to 100 m from the base station to establish the outdoor temperature and humidity and be displayed as an alternative to the indoor values.

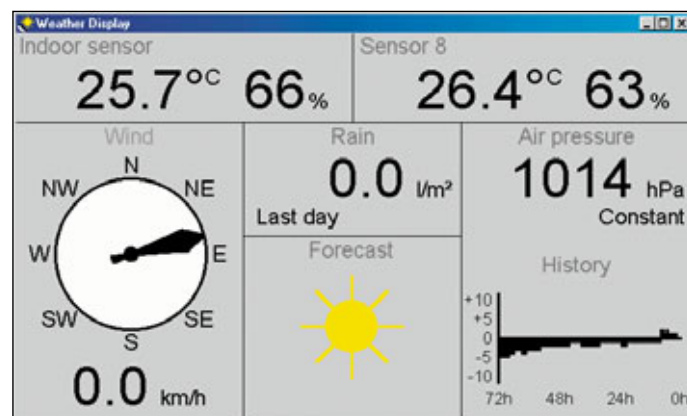
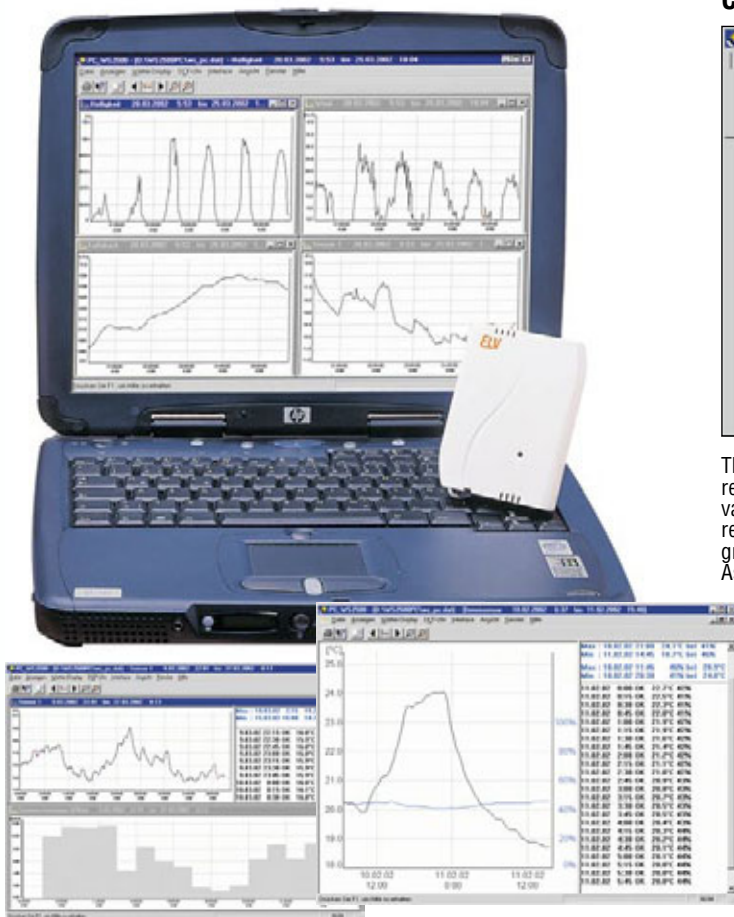
BA 1010

Order No.: 17-387-57

Specifications BA 1010:

Air pressure measuring range:	300 to 1100 hPa
Resolution/Accuracy:	1 hPa/±1hPa
Analog pointer display range:	950 to 1050 hPa
Digital indicator display range:	300 to 1100 hPa
Temperature display range:	-40 °C to +80 °C
Resolution/Accuracy:	0.1 °C/±1 °C
Relative humidity display range:	20 to 90% RH
Resolution/Accuracy:	1%/±8%
Weather forecast:	Weather symbols for sun, fine, cloudy, rain
Air pressure tendency display:	By means of arrows in the corresponding direction
Climate display:	Dry, fine, wet
Power supply:	3 x 1.5 V round cell batteries (service life 2-3 years)
Dimensions (ø x T):	170 x 36 mm

Comfort Radio PC Weather Station WS 2500 PC



The WS 2500 PC is equipped with an RF receiver and can receive all measured values from the WS 2000 system. The received values are stored in the integrated memory for up to 31 days.

As a result, the WS 2500 PC is particularly suited for long-term measurements in professional use, such as agriculture, shipping, etc. or for private use such as hobby gardening etc.

When connected to a serial port of a PC, the measured values received can be read out and analyzed using the comfortable Windows software. The main features of the software are storing, data representation and data output to a printer. The data can also be exported in ASCII format for use in other programs. Complete weather profiles of a day, week, month or year can be com-

pleted in the form of charts or graphical representation. Further features include:

- Connection of up to 16 temperature/humidity sensors
- Connection of separate sensors, independent of the WS 2500 system

System conditions for use:
Operating system Windows 95/98/2000/NT/ME/SP

Order No.: 17-477-54

Specifications WS 2500 PC

Radio transmission:	433.92 MHz/Range up to 100m
PC interface:	Serial port COM1/2/3/4
Dimensions:	100 x 70 x 20 mm

The New Radio Thermometer/Hygrometer in the Vario Housing

The new ELV radio thermometer/hygrometer in the Vario series, with its elegant desktop design, is fully radio-controlled, which opens up a wide range of uses for data transfer involving temperature and relative humidity values in other rooms, greenhouses, storage rooms, etc. In addition, all the models have an integrated DCF controlled radio clock with calendar function, so that the times when maximum and minimum values occur can be recorded with great accuracy.



FTH 2000

- Displays the indoor temperature and one of up to 8 selectable outdoor temperatures with the related relative humidity.
- Easy to use zone display for indoor and outdoor climate monitoring according to the outdoor sensor selected.
- LC display, 13 mm digit size
- Alternatively, it can display the minimum and maximum values of the selected outdoor sensor and the indoor sensor since the last reset.
- DCF 77 radio clock with time, date and weekday display and a reception indicator. The clock can be changed manually.

Order No.: 17-401-77

FT 2000

- As the FTH 2000, but with up to 4 selectable outdoor sensors, without relative humidity measurements and zone display.

Order No.: 17-401-76

Radio Temperature Sensor AS 2000
Order No.: 17-401-78

Radio Temperature/Humidity Sensor
ASH 2000
Order No.: 17-401-79

Technical Data:

- Data transfer per radio (433 MHz) • 100 m open space range • Temperature range, indoors: -19.9 °C to +70.0 °C, • Temperature range, outdoors: -30.0 °C to +70.0 °C, - Resolution 0.1 °C • Accuracy ±1 °C • Relative humidity measuring range (FTH 2000 only): 0% - 95% relative humidity - Resolution 1% • Accuracy: 8% • Battery service life, approx. 2 to 3 years • Dimensions (WxHxD): 81 x 130 x 65 mm

ELV Design Thermometer/Hygrometer



Not simply a temperature and humidity meter – the new ELV Design Thermometer/Hygrometer captivates by its deep blue LED display, surrounded by a robust, naturally anodised designer aluminium frame with midnight blue front panel. Not only do you gain an overview of the weather, you are also the owner of an engineering design object that attracts attention wherever it is installed.

Simultaneous display of temperature and air humidity, either indoors or outdoors. Fully wireless data transfer from indoor and outdoor sensors via radio in the 868 MHz band over a distance of up to 100 m (free field) or 20 m (in buildings). Automatic display change between indoor and outdoor values is possible. Large, blue LED display with 20 mm character height.



Settings are retained even in the event of a power loss. High resolution and measuring accuracy.

Order No.: 17-446-97

Appropriate temperature –
air humidity sensors
ASH 2000 external sensor
Order No.: 17-401-79
S 2000 I internal sensor
Order No.: 17-317-57

Technical data

Display: 20 mm LED display, blue
Temperature display range: .. -19.9 °C to +79.9 °C
Resolution: 0.1 °C
Accuracy: ±1 °C
Relative air humidity display range: .. 0 - 99 % RH
Resolution: 1 %
Accuracy: ±8 %
Voltage supply: 12 V/250 mA
Dimensions 287 x 345 x 30 mm



No matter where you are with the ELV wind egg you can measure the exact wind strength and weather situation directly on site

Stationary wind meters have not always been available at all sites where they are needed, such as sites for flying model aircraft, para-gliding, sailing, surfing and many other leisure activities. In addition to the excellent portability provided by its compact design and the innovative "packaging" of the wind wheel, the new ELV handheld wind meter permits not only determination of the wind strength, but also the complex assessment of the weather situation at the site.

The large LC display shows simultaneously • the wind strength in digital and quasi analogue form • the max. or average wind speed • the temperature at the site and • the min. or max. temperature as required.

Short-term changes can be understood more quickly using the analogue bar graph display than the digital display. The wind strength can be displayed in knots, km/h, miles/h, m/s or Beaufort as desired, with the temperature either in °C or °F, or alternatively as a wind-chill equivalent ("sensed temperature"). The latter display is very useful as it enables you to make a real evaluation of the heat loss of the human body when subject to wind, and therefore prevent hypothermia. In this respect operation of the hand-held device with only two large keys is especially simple. The protective cap that protects the wind wheel against damage in transport can also be used as a stand for the device when in operation, so that a firm and secure mounting is provided. For battery conservation the device has an automatic battery disconnect.

Order No.: 17-391-63



Functional:
The protective cap that protects the wind wheel against damage in transport can also be used to provide a secure mounting for the machine.

Technical data: ELV hand-held wind meter

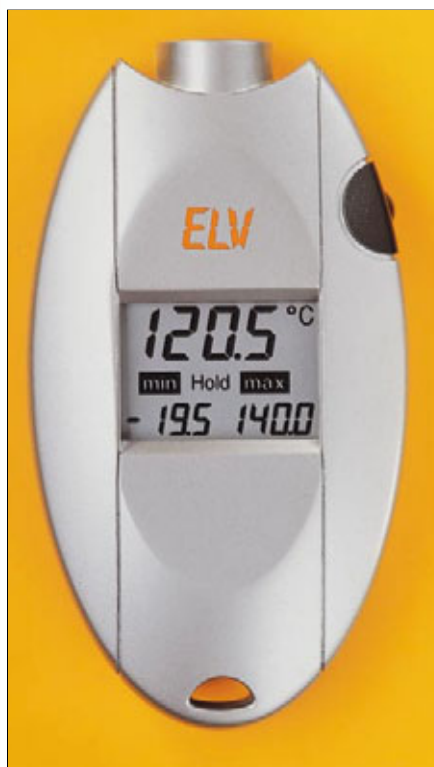
Wind strength:

Measuring range: ... 0 to 200 km/h
Resolution: max. 0.1 km/h
Accuracy: ±5 %

Temperature:

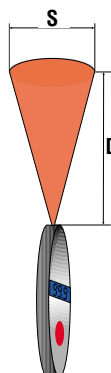
Measuring range: -20 to 70 °C
Resolution: max. 0.1 °C
Accuracy: ±1 K
Voltage supply: 2 x AAA microcells
Dims. (HxWxD): 180 x 70 x 60

Contact-free infrared thermometer ELV PyroScan 140/300



Easy contact-free temperature measurement:

- For difficult to reach or inaccessible locations
- On and inside buildings (cold bridges, heat distribution)
- For foodstuffs (no transfer of germs, no opening of packaging)
- On hot components (engines and machinery, motor sports, model construction)
- For heating and sanitation applications (e.g. heat loss)



Extremely compact and handy infrared thermometer in ELV designer housing for contact-free measurement of temperature across a wide temperature range.

The most up-to-date infrared temperature technology is used, which enables measurement in a fraction of a second without needing to touch the object being measured. The thermometer can also be used for the contact-free measurement of stationary and moving objects such as the determination of cold bridges in a house.

The determined value is displayed in a large backlit LC display, with simple operation via a single key.

Additional functions:

- Cyclical measurements for the capture of temperature distribution are possible, so that areas that are getting hot very quickly, such as on machines or as a result of heat distribution in a room, can be detected in seconds.
- Continuous capture of minimum and maximum values for the quick



evaluation of the hottest and coldest points with simultaneous display below the current temperature.

- Data hold function for the storage of the last measurement value in the display.
- Good D:S relationship: 5:1, (e.g. Ø measuring area: 10 cm at 50 cm measuring distance).

Supplied with carrying strap, carrying pouch and batteries.

Technical data:

Range: PS 140: -20 °C to +140 °C
..... PS 300: -20 °C to +300 °C
Resolution: PS 140: 0.5 °C
..... PS 300: 0.1 °C
Operating temperature: 0 to 40 °C
Distance/beam illumination ratio: approx. 5:1
Voltage supply: 4 x LR 44 button cells
Dimensions (HxWxD): 102 x 56 x 23 mm

ELV PyroScan 140
Order No.: 17-444-90

ELV PyroScan 300
Order No.: 17-444-91

Combined Electric and Magnetic Field Measuring Instrument

Combined measuring instrument for precise and comfortable measuring of electric and magnetic fields over a large frequency range. Because it is controlled by a microprocessor the operation is very easy and have a lot of additional features.

That electric and magnetic fields affect the human organism is indisputable. So these fields should be avoided.

With this combined measuring instrument it is very easy to detect and precisely measure electric and magnetic fields, caused by transformers, cables, television, monitors, choke coils of fluorescent lamps, low voltage halogen lamps, switching power supplies, etc. Protective measures can be checked quickly and easily.

The measured values from the combined sensor are shown immediately on the 3.5digit LC-display with integrated bar graph representation. Additional features are the peak-, hold-, highpass- and lowpass function.

Order No.: 17-292-81



Specifications:

Frequency range: 10Hz-80kHz
Magnetic field: 2/20/200uT
Electric field: 200V/m, 2kV/m
Display: ... 3,5 digits with bar graph
Filter: lowpass: 500Hz
Highpass: 500Hz
Power supply: 9V

Precision Digital Luxmeter ELV LM 300

Digital brightness measuring instrument



With evaluation filter for "eye characteristics"

Brightness measurements in a range from 0.1 Lux to 200,000 Lux (!) can be made using this professional luxmeter with integrated evaluation filter.

The integrated evaluation filter adapts the measurement characteristics to the relative spectral sensitivity of the human eye. As a result, an objective measurement of the brightness is made and displayed which can be perceived by the human eye. A data Hold function enables measurements in the display to be recorded.

The material supplied, the

measuring sensor includes filter disk, protective cap and flexible feed line. Power is provided by means of a 9 V compound battery (not part of the material supplied).

Order No.: 17-388-23

Specifications LM 300

Measuring range: . 0.1 to 200.00 Lux, 4 ranges
Basic accuracy: At 20 °C ±2 Lux
Resolution: 0.1 Lux
Calibration: Automatic
Operation environment: 0 °C to +50 °C, max. RH 95%
Dim. (H x W x D): 172 x 71 x 28 mm

1.3 GHz Hand-held Frequency Counter FC 500

Compact frequency counter with excellent technical characteristics and wide ranging functional equipment. Due to its microprocessor control, it combines the equipment of a fixed desktop unit with the advantages of a mobile measuring unit.

The counter enables input-synchronous frequency measuring, meaning also the measuring of very low frequencies with a full display resolution.

Measurement types/functions available:

- Frequency, input-synchronous
- Duration, input-synchronous
- Measurement of positive/negative pulse width
- Event counting
- Hold function for saving measured values
- Energy-save function

Operation via a 9 V compound battery or 12 V plug-in adapter (battery and adapter not part of material supplied).

Order No.: 17-415-02



Specifications FC 500

- Inputs: 10 Hz-50 MHz/1 MΩ (50 mVeff), 50 MHz-1.3 GHz/50 Ω (50 mVeff), 0 Hz-50 MHz/TTL • Display: 8-digit LCD • Measuring options: Frequency, duration, pos. pulse width, neg. pulse width, event counting
- Minimal gate-time: 0.00 - 9.99 s
- Power supply: 9 V compound battery or 12 V plug-in adapter /100 mA
- Dimensions: 71 x 172 x 28 mm

Precision Thermometer T 600

The new thermometer T 600 enables very accurate temperature measurements within a wide temperature range from -100 °C to +500 °C.



Order No.: 17-454-95

Apart from normal temperature measurements, the minimum and maximum temperatures are also established. To improve legibility, the current measured value can be frozen (Hold) in the display. The display can be defined in °C, °F or in K. The improved switching technology and high quality platinum sensor element in the 300 mm long stainless steel tube ensures great accuracy and long-term stability.

Specifications T 600

Measuring range : -100 °C to 500 °C
Resolution: 0.1 K
Accuracy (-50 °C to 100 °C): Typ. 0.4 K
Accuracy (all other areas): Typ. 1 K
Possible temperature units: °C / °F / K
Dimensions (without sensor) L x W x D: 171 x 71 x 27 mm
Length of sensor (without handle/line): 300 mm
If necessary, simple calibration without interference in the unit is possible.

Brain Fit easy



BrainFit easy
Order No.: 17-387-21



BrainFit plus
incl. stereo headphones
Order No.: 17-422-79



A dream come true: Brain power can be increased

By using BrainFit easy, it is possible to increase the processing speed of your brain thus increasing your performance capabilities. It only takes up a few minutes training each day and after only one week you'll start to see signs of success. Years of practical experience have proved that the brain performance can be doubled within just a few weeks. This value can be stabilized with occasional training.

BrainFit easy contains two red LEDs which are controlled by a microprocessor and which light up simultaneously. If the time between the two flashes was 50 ms and the frequency of your brain at 30 Hz corresponded to a period of 33 ms, it would be no problem to determine which of the two LEDs lit up first.

If the period between them lighting up lessens, based on our example, to below 33 ms, it is no longer possible to determine which of the two LEDs lit up first. To enable a targeted brain jogging, i.e. to improve the clock frequency BrainFit easy issues two flashes at random after being started at 100 ms. If you noticed which of the two LEDs lit up first, press the corresponding confirmation button.

Caution: BrainFit easy is not a reaction tester, i.e. you can take your time pressing the button.

After releasing the button, BrainFit easy issues two more flashes. The period between the flashes is reduced if the previous answer was correct, otherwise the period is increased according to a microprocessor controlled algorithm. In this way, you step closer to your personal clock frequency within just a few minutes.

BrainFit plus: For your ears, too

What is possible visually is also possible audibly. BrainFit plus also provides the option of equivalent training for the ears (improvement of the hearing process). To achieve this, BrainFit plus is equipped with a headphone output (headphones part of material supplied). Directly after the start, two short click pulses are issued at a defined interval, the button confirmation is the same as for Brain Fit Easy.



**Test winner of many
specialist periodicals**

Perfect copying of all copy protected DVD + video films

The VKD 7002 reliably eliminates presently known copy protection methods on video cassettes. In contrast to usual eliminating methods the VKD 7002 switches only the pure picture information through and generates all other signals new.

easy operation

The VKD 7002 is equipped with 3 scart jacks for connecting 2 video recorders and one television. So the device is inserted between the playing and the recording video recorder.

The copying direction is changeable directly on the device. When the decoder is switched off, the playing recorder is connected to the television. Furthermore the VKD 7002 has an integrated 230V power supply.

optimizing picture quality

Because of the decoder technology that the VKD 7002 uses it can optimize the picture quality of the recorded Signal in case of slurred sync. pulses. Furthermore for better picture quality there is a „contour“ control knob available.

Order No.: 17-250-59

High-End-Hifi-Stereo-Vacuum-Tube-Amplifier ELV-RV-100



The new ELV-RV-100 combines experienced vacuum tube technology with modern developments and high quality components. The result is a vacuum tube amplifier with extraordinary specifications like 100 watts power on 4 Ω or 8 Ω with a bandwidth of 20 Hz-40kHz. We use only specially selected vacuum tubes, special high voltage electrolytic capacitors and handmade output transformers. For optimal channel separation of the two 50 watts power amplifiers the ELV-RV-100 has 2 separated amplifier boards and 2 separated power supplies with 2 transformers. This in combination with the level control knobs, which are mounted at a distance from each other, allows the ELV-RV-100 to

obtain channel separation of 100 dB min. In addition to the excellent specifications the ELV-RV-100 has a clean simple design. The 8 vacuum tubes are emit a warm orange glow and offer a very good contrast to the black and chrome glossy background. A special design element is the casing cover, which is made of special burnished stainless steel. The transformers and the vacuum tubes are reflected in the casing cover. This causes a very pleasing optical effect. The ELV-RV-100 was designed for mass production in order to obtain a very low price. The excellent specifications are shown in the chart.
Order. No.: 17-319-42

Specifications RV-100:	
Continuous power output:	2x 50W
Bandwidth:	20Hz- 40kHz +/-1dB
Signal to noise ratio:	>90 dB
Channel separation:	>100dB
Input voltage:	DIN-level, 0,7Veff.
Input:	2x cinch, gilded
Input impedance:	2x50kΩ
Output:	2xbinding post, gilded
Output impedance:	4Ω or 8Ω
Vacuum tubes:	4xEL34L, 2xECC81, 2xECC82
Power supply:	230V/50Hz/max. 350VA
Dimensions:	430 x 200 x 420 mm
Weight:	16,5kg

HiFi Stereo Tube Amplifier ELV-RVV-100



Extends the tube high level stage ELV-RV-100 to a complete, high performance HiFi stereo tube amplifier, but can also be used as a signal supplier for all other high level stages.

- 5 different audio signal sources can be connected (CD, tuner, AUX, tape and phono).
- Phono input for record player with magnetic scanning system (MM system) and integrated equalizing pre-amplifier complying with RIAA specifications.
- The tape output enables the connection of any recording unit (cassette recorder, tape recorder, mini-disc, etc.). In conjunction with a corresponding cassette player, it is possible

to use the tape monitor function to control the new recording directly.

- The signal level and output impedance of the line output have been selected so that practically all HiFi high level stages can be controlled.
- The easy adjustment of the volume with low signal levels enables a Mute function, which provides an extension of the volume control range.
- Excellent tone quality and good technical data (refer to the table) are ensured by the optimized construction and specially selected components.

Order No.: 17-346-24

Specifications RVV-100:	
Max. output voltage:	4.5 Veff
Distortion factor:	
- High level:	0.12 %
- Phono:	0.27 %
Frequency response (-1dB):	7.5 Hz - 130.000 Hz
- Phono:	Complies with RIAA Amplification
- CD:	7.5 dB
- Phono:	54 dB at 1 kHz
- Others:	14 dB
Output impedance:	1 kHz
Output sockets:	Cinch (RCA), gold-plated
Input impedance:	47 kΩ (Phono)
Input sockets:	Cinch (RCA), gold-plated
Tubes:	2 x ECC82, 2 x ECC83
Operating voltage:	230V/50 Hz/23 VA
Weight:	6.8 kg
Dimensions:	430 x 150 x 310 mm

Switching PC Periphery Using USB - USB Master Slave



Modern PC power supply units for ATX boards are no longer equipped with a switched mains connection for external devices so that printers, monitors and other components must be switched on and off individually. The USB Master Slave enables the periphery to be switched on and off automatically together with the computer via the PC's USB port. By using the modern opto-triacs, the periphery is switched electrically separated from the USB.

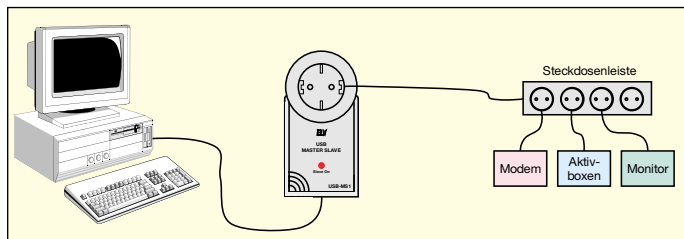
The switch, which is accommodated in the nicely designed plug-socket housing is simply connected to a free USB

port on the computer, loads with a power consumption of up to 3,600 VA can be switched via a power relay.

Order no.: 17-378-30

Technical Data:

Mains power supply: 230 V/50 Hz/16 A
 USB voltage: 5 V
 Idling power consumption: 0 W
 Max. switching power: 3,600 VA
 Switching status display: LED
 Dimensions: 132 x 67 x 40 mm



ELV Master Slave MS 97-3/6

The master slave switch MS 97 is a very comfortable device for many applications in home, workshop, electronic laboratory, etc. As soon as the device, which is connected to the master socket, is switched on, the MS 97 automatically switches on all devices, which are connected to the slave socket. So the uncomfortable switching on of every device is not necessary anymore. For example the MS 97 will be a good help in use together with a computer system. The PC monitor is connected to the master socket, the PC, printer, lamp, etc. are connected to the slave socket.

So only the monitor has to be switched on. The switching threshold is adjustable in the range of 5W - 180 W, so that a wide range of master load is possible. The maximum slave load is 4,000 VA. The MS 97-3 comes with a triple slave socket, the MS 97-6 comes with a six-fold slave socket.

MS 97-3
 Order No.: 17-278-25

MS 97-6
 Order No.: 17-345-04



PC fan control/temperature display

PC crashes and other faults are not always caused by the software, and the overheating of a critical component such as, for example, the processor can be the cause of mysterious phenomena.

Otherwise well-cooled components, assemblies and devices can also suffer from overheating if a fan fails without being noticed.

The PC temperature display in the form of a practical 3.5" plug-in module provides a clear view of the temperatures at two different measuring points in the PC in the form of a digital display, and in critical situations allows a fan to be controlled or an alarm to be sounded. For each of the two measuring channels there is the option to connect an additional fan to improve cooling (for the hard disk, for example) and to run an unregulated 12 V fan (e.g. power supply fan) in a controlled manner.

If a set maximum temperature is ex-

ceeded an audio alarm signal sounds, thus alerting the operator to the critical operating condition.

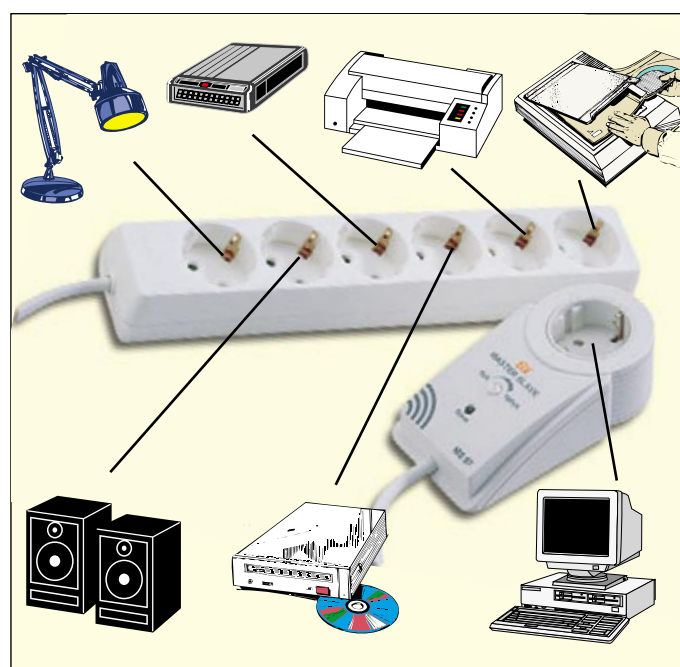
Damage caused by fans that have failed or a room temperature that gets too high in summer can therefore be avoided, as the computer powers down and switches off in good time.

Order No.: 17-433-69

Technical data: PC temperature display

Range: 0 °C to 100 °C
 Resolution: 0.1 K
 Unit: °C or °F
 No. of measuring channels: 2
 Length of the sensor wires: 70 cm
 Air mvmt. control: ... 2 out., 12 V, max. 300 mA each
 Supply (from PC power supply unit): 5 V/150 mA, 12 V/max. 600 mA
 Dimensions: 115 x 25 x 144 mm (3.5" drive)

Switch several devices at the same time



ELV Chipcard Reader EasyCheck Multi-Purpose Chipcard Manager

EasyCheck, the ELV chipcard reader, is a multi-talent in the area of chipcard readers. The high performance management program provided with it can be used to read out chipcard data and to edit and write back selected data to the GSM telephone card.

Today, chipcards are used for everyday purposes, such as cash dispenser cards or GSM cards for mobile telephones.

In many cases, it is important for the user to know what data is on the respective card, e.g. on the cash dispenser card to know the current state of the account.

But chipcards can do more. Especially the so called GSM cards are destined for multi-purpose use since they not only store the user's telephone book but also the management data for network operators, rates, to access rights, PINs etc.

A great deal of this data can be edited using the telephone, such as the telephone book.

This is even easier using a PC, after the data has been loaded from the chipcard reader. After editing, the edited data can be easily transferred back via the chipcard reader.

Saving the data on PC as a safeguard against loss is a particularly interesting application, as is

the option of writing the data, collected over years, onto a new chipcard after changing provider.

A special feature is the possibility of managing SMS data on the PC screen - an application with a constantly increasing significance.

The ELV chipcard reader EasyCheck can be used to carry out all of this when the related Windows software is implemented.

The chipcard reader is connected to the PC on a free serial interface. A comprehensive manual (CD-ROM) and the online help provide users with excellent support.

Delivery includes:

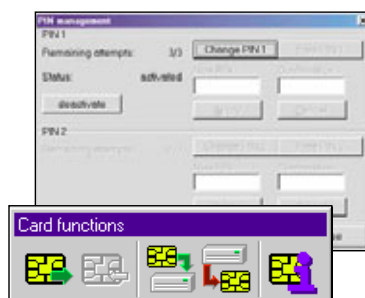
Chipcard reader with serial connection cable, SIM adapter card, software in four languages (German, English, Italian, French) online manual in four languages

Incl. software and SIM card adapter

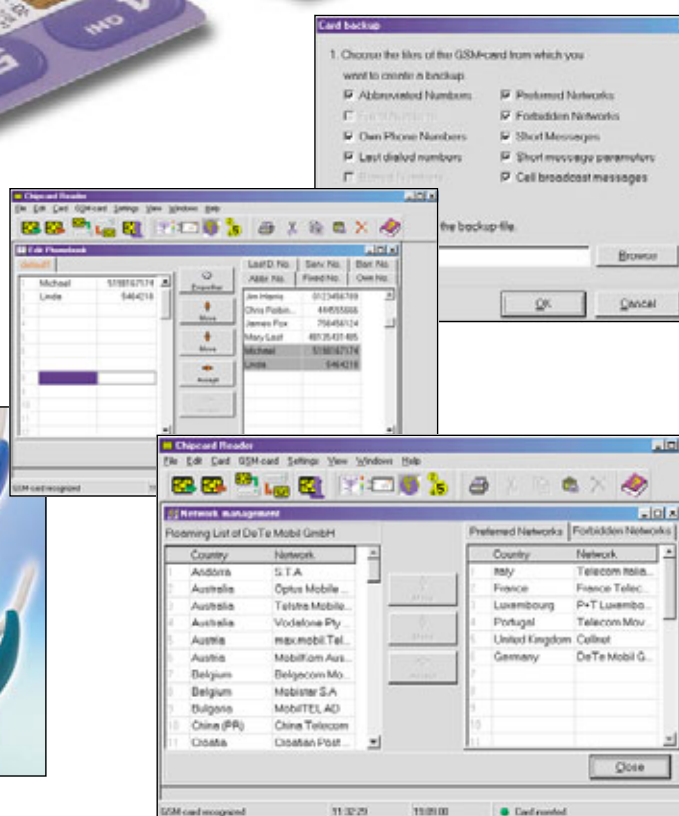
Colour: Clear blue

Order No.: 17-389-26

Order No.: 17-476-05



Colour: Clear green
Order No.: 17-389-25



Individual functions:

GSM cards

Managing telephone books:

- Dialogue guided import/export via text files and temporary memory from and to practically all Windows applications
- Management of several telephone books which can be stored on the hard disk
- Moving telephone book entries between different telephone books per drag & drop, temporary memory or buttons
- Internationalization of telephone book entries
- Sorting telephone books
- Printing telephone books

Managing short messages (SMS):

- Create new short messages
- Copy short messages using the temporary memory
- Storing short messages
- Printing short messages

- Managing short messages
- Activating network messages

Managing preferred/prohibited networks:

- Selection of preferred or prohibited networks from roaming list of the respective mobile communication provider (e.g. to delete foreign providers when in the vicinity of borders)
- Processing roaming lists
- The software contains stored roaming lists of over 160 mobile telecommunication operators world wide and manages 193 known mobile telecommunication operators

Create backup copies:

- Simple creation of backup copies

Restoring cards:

- Cards which have been stored beforehand can be reset to their original

state after unnecessary modifications have been carried out

Managing PINs:

- Modify, unlock and deactivate PINs

Card editor:

- View and modify the contents of card files

Cash dispenser cards (Germany only)

- Read out card information, the current remaining balance, the last three loading procedures and the last 15 debits
- Assignment of names for the terminal IDs
- Print card files

Card types support:

- GSM cards, mobile telephone operators worldwide
- Germany only: cash dispenser cards

System condition for use: Operating system Windows 95/98/ME/2000/NT, min. 16 MB working memory (32 MB with Windows NT)



World innovation: E-XP⁻¹ radio-controlled mini submarine



Dimensions (L x W x H): 7,6 cm x 5,9 cm x 4,9 cm



Probably the smallest series-produced submarine in the world, developed and built at the „ELV shipyard“ in Leer.

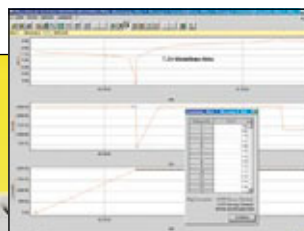
You'll hardly be able to believe your eyes. Among the goldfish in the aquarium is a remote-controlled, fully manoeuvrable mini submarine the size of a Kinder Surprise egg. Use the E-XP⁻¹ in your aquarium, washbasin or bath - it can be operated in the smallest of spaces.

The refined receiver and drive electronics are housed in the belly of the submarine in a water-tight capsule. Speed, submersion and left/right turns are controlled using the 2-channel radio control transmitter which comes with the set.

Order No.: 17-381-82



Battery Charging Center ALC 7000 Expert



The microprocessor controlled battery charging center ALC 7000 Expert is particularly suited to the requirements in model construction and other areas where several battery packs and sets need to be charged simultaneously. Since the full performance capacity of a battery or battery pack can only be maintained through providing the necessary battery care, the ALC 7000 Expert is equipped with programs to refresh and regenerate batteries as well as functions to charge and discharge them. In addition, the ALC 7000 Expert performs a precise battery capacity measurement. By selecting individual cells, high performance battery packs can be combined in a simply way.

The charge channels 1 and 2 are designed for charging voltages of up to 30 V

- Suitable for quickly charging NC, NiMH, lead and lead gel batteries
- 4 charging/discharging bays, of which 3 can be operated simultaneously using different programs
- 6 different programs for battery care
- Simultaneous display of battery voltage, current and capacity
- Large, back-lighting multifunctional display
- For vehicle batteries 1-20 cells/3.5 A and transmitter/receiver batteries 1-10 cells/1 A
- Safety temperature monitoring
- Separate monitoring and control of each charging/discharging channel
- Accurate battery capacity measurement (thus, selection of individual cells possible)
- Simple operation with graphical user guidance
- Automatic saving of all unit configurations
- Serial RS-232 interface for PC connection

(24 V rated voltage) and max. output currents of 3.5 A. The charge current provided is referenced to the number of

cells of the battery connected, whereby one has access to 3.5 A up to 7.2 V rated battery voltage.

Max. 15 V charge voltage (corresponding to 12 V rated battery voltage) and up to 1 A charge current can be supplied by channels 3 and 4.

All the set unit configurations and program processes are stored and are retained even following an interruption in the power supply.

The programs:

- Charge (ΔU process) with compensation charge
- Discharging with capacity detection
- Discharge/Charge: Discharge with capacity detection, then charging and compensation charge
- Test/Capacity measurement: Complete charge/discharge cycle with precise capacity measurement then charging and compensation charge
- Cycles/Regeneration: The program continues the charge/discharge program until no further capacity increase can be detected. Then compensation charge is applied.
- Refresh: Batteries which no longer function correctly or are totally discharged can be given a new lease of life with this function. Generally, an existing Zellenschluss can be eliminated by current pulses. The program then executes several charge/discharge cycles.

Serial interface

A serial RS-232 interface is provided for connection to a PC. By implementing the software supplied, measured values can be displayed as trend curves and in tables. It is also possible to print the trend curves and tables and export the data to other programs.

**Battery Charging Center
ALC 7000 Expert
without RS-232 interface**
Order No.: 17-422-51

**Battery Charging Center
ALC 7000 Expert
with RS 232-interface and software**
Order No.: 17-422-52

Trust is good – knowledge is better The new ELV telemetry system

Real-time data transfer in model sports does not have to be expensive! The newly developed telemetry system from ELV supplies information on three key basic functions while the model is in flight or on the ground – namely, monitoring of the receiver battery voltage, altitude measurement and the variometer. Other features include the timer function, storage of the maximum flight altitude, programming of a flight altitude alarm and either visual or audible signalling. The telemetry system is easy to install and comes complete in the usual ELV quality and at an incredibly attractive price.

The battery monitoring function

Information about the charge state of the



battery is crucial in model sports. The voltage is monitored directly in the model.

The variometer function

The variometer is one of the most important tools for model gliders since it allows you to locate and utilise thermals. It uses different frequencies of tone to inform you whether the model is currently climbing, descending or maintaining a constant altitude.

The current flight altitude

In addition to display of the battery voltage, the current flight altitude can also be read directly from the VAM 200 receiver. The max. flight altitude is saved and can be read out after the flight, e.g. for statistical or optimisation purposes. A flight altitude alarm can also be programmed. Every time the model flies above or below this specified altitude, an audible signal sounds in the receiver.

VAT 200 pager version and VAM 200 enhanced-feature version with display.

Two types of receiver can be supplied. The VAT 200 compact pager has 4 LEDs which provide the user with a visual display of the battery voltage and a loudspeaker for issuing a warning signal if the battery voltage falls below a critical value. When using the supplied earpiece, it is virtually impossible not to hear the warning signal.

If the multifunctional VAM 200 receiver with large display is used, the receiver battery voltage is shown in bar graph form.

Both the VAM 200 and VAT 200 receivers are designed for outputting information from the variometer. The three typical flight attitudes 'climbing', 'de-



scending' and 'constant altitude' are signalled audibly at both receivers. If the model climbs at a rate in excess of 1 m/s, this is indicated by a high-frequency tone (1000 Hz). If however the model descends at a rate of more than 1 m/s, a deep-pitched signal sounds (500 Hz).

VT 100 transmitter

The battery voltage is measured directly on the battery via the small, extremely compact (39 x 13 x 53 mm) 433-MHz VT 100 transmitter which weighs in at only 25 g. Can also be used for BEC systems by setting the number of cells (4 Dip switches).

VAT 100 transmitter

Same design as the VT 100, but with additional flight altitude and variometer function. The altitude is measured by means of an extremely precise, calibrated barometric sensor. During the flight, the air pressure readings are transmitted continuously to the receivers.

VAM 200 with VAT 100 Order No.: 17-405-06



Key features:

- No interference in 27-MHz/35-MHz/40-MHz bands through transmission in 433-MHz band.
- Voltage monitoring also possible with BEC systems (4-8 cells).
- Altitude measurement: 0-500 m
- Variometer sensitivity: 1 m
- Free-field range: up to 500 m
- Extremely compact size of transmitters, only 25 g in weight, mean they can be used in virtually every model.
- ELV telemetry system can be used equally effectively in model aircraft, ship and car construction.



rpm-Check – the touch-free rev counter

The handy "rpm-Check" measures the speed of rotating objects at the touch of a button and displays the result directly on its LC display.

This makes it possible to measure the speed of aircraft propellers and helicopter rotors with different numbers of blades, as well as the speed of ship propellers, car wheel rims and shafts in general, provided that a clear contrast exists between the rotating part and the background or appropriate marking can be added. Incl. batteries.

Order No.: 17-350-18

Specifications:

Measuring ranges: Shaft: 120 to 99,990 rpm / 2 blade: 60 to 57,000 rpm / 3 blade: 40 to 38,000 rpm / 4 blade: 30 to 28,500 rpm • Measuring precision: ± 2 digits • Power supply: 2 x LR 44 button cells • Weight: 25 g • Dimensions: (W x H x D): 42 x 55 x 13 mm



ELV-Peak 3+ charger

As well as charging your valuable traction batteries quickly and without damaging them, the intelligent rapid charging concept also ensures reliable end-of-charge detection. Following rapid charging, the battery is brought to 100% capacity using transition charging.

Order No.: 17-343-06

Key features:

- End-of-charge detection via voltage gradient measurement and additional DU monitoring
- Voltage measurement at zero current
- Chargeable battery types: 7.2 V and 8.4 V model-making traction batteries (6 and 7 NC cells)
- Operating voltage: 12 V-14 V DC
- Charging current adjustable from 0.7 A to 3.2 A
- Error detection and display via LED



LZT 24-2

Wire Assignment Tester

Clear identification of lines without an additional reference line.

For fast, simple identification of up to 24 wires in just one working process without any assisting personnel. The LZT 24-2 can uniquely identify up to 24 single wires in a cable without the necessity of an external reference line. The reference wire can be located in the cable to be measured. No assisting personnel is required for wire identification.

The respective wire being tested is displayed in the large, alphanumeric display of the receiver, as is a breakage or short circuit of the wire.

The LZT 24-2 has an automatic switch-off feature for the transmitter and receiver to save battery power and a 'Low-Bat' indicator when the battery is empty. The power supply for the transmitter is provided by 2 round cell batteries, the receiver by a 9V compound battery.

LZT 24-1

Order No.: 17-355-81

LZT 24-2

Order No.: 17-377-68



LZT 24-1

Line finder LS 100

New generation of line finders...

The commercially available line finder has become obsolete - the new LS 100 outstrips it by far in terms of functionality and certain localization.

The search for thin signal lines whose layout is unknown and concealed is a source of major problems due to the minimum availability of metal surfaces, particularly when power supply cables run nearby. Standard line finders are not good enough in this case.

The LS 100 however, consisting of transmitter and receiver, is predestined for this task. The specially sensitive receiver (with audio output and adjustable sensitivity) is capable of tracking even very thin lines concealed in walls enabling accurate localization.

To locate the line, the transmitted signal is connected to a wire of the line to be traced (no earth reference necessary). The line is traced accurately using the peaks received by the receiver, even when the line is concealed in a wall. Even lines with several branches can be located accurately.

In addition, lines can also be checked for short-circuiting, interruptions and insulation faults. Power supply via 1 x 9 V compound batteries (not part of material supplied).



LS-S 100

LS-E 100



Order No.: 17-409-62



...single-pole signal feed, no earth reference necessary.

...locates thin signal and data lines beside power cables.

Specifications:

Line finder, sender LS-S 100

Functions: Resistance test and tone generator

Test signal: Alternating 1300 Hz, 750 Hz (square wave signal)

Resistance test: 3 ranges with LED display (< 1 k Ω , 1 k Ω -100 k Ω , > 100 k Ω)

Dimensions (L x W x H): 115 x 65 x 26 mm

Line finder, receiver LS-E 100

Input: Gold plated scanning tip

Input resistance: 4.7 M Ω (FET input)

Signal coupling: Capacitive

Volume: Continuously adjustable

Dimensions (L x W x H): 130 x 42 x 22 mm

LS 50 - The programmable enhanced-feature soldering station



Simple, fast temperature setting

using up/down switch 3 temperatures, or 2 temperatures plus standby temperature, can be preset and retrieved at the touch of a button.

High-quality 48W soldering iron



Standby /auto power-off function

After the programmed period of time has elapsed, the LS 50 automatically switches to the preset standby temperature or switches off completely.

Multifunction display

provides a clear overview of all major parameters on the high-contrast LC display

Offers numerous useful features and excellent user convenience at an affordable price

Order No.: 17-355-80

The future of soldering has already begun - Programmable ELV Comfort Soldering Station LS 60

- 5 programmable functions
- Back-lighting jumbo LCD
- Automatic drawer for solder sponge
- Automatic standby and power off

Not only the comfortable, easy-to-use temperature storage options and large, light blue back-lighting LCD make working with this soldering station a pleasure, but the previously used, mundane "soldering iron systems" could not offer this level of comfort. By simply pressing a button, the soldering sponge is wet with water from an internal tank and it can also be extended or retracted by pressing a button or via the station. This prevents the sponge drying out enabling work to be started immediately. Finally, a high quality, maintenance-free soldering iron module completes the perfect soldering at the soldering points.

Simple operation

3 temperatures at the press of a button

The soldering station enables 3 setpoint temperatures to be programmed which are then available on pressing a button. Optionally, a temperature can be defined as a standby temperature so that the temperature can be reduced at the press of a button during breaks in soldering.

Multifunction display

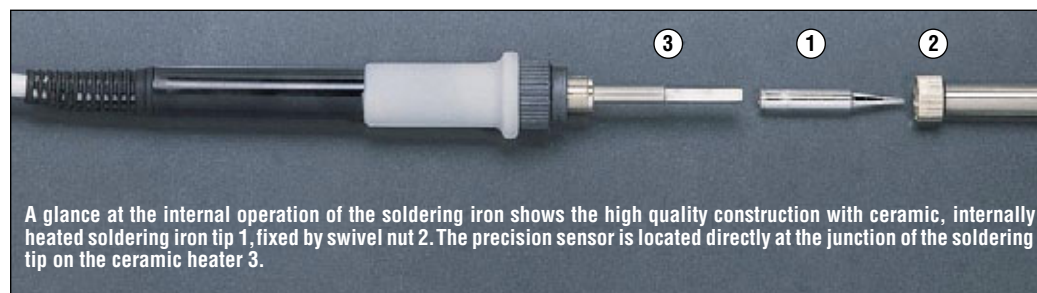
Enables the simultaneous display of set and actual temperatures of the soldering iron and up to three set temperatures. Switch between °C and °F. All operating statuses are displayed in plain text (normal, programming or standby). The heating balance (heating performance) of the soldering iron is indicated on a bar graph to provide a constant view is available concerning the soldering iron utilization during longer soldering processes.

Standby/Auto PowerOff

In addition to the programmable temperatures, an automatic Standby function and Auto Power Off function are integrated. In this case, respective standby and power off times can be programmed in steps of 5 min. (up to 9:55 h).

Soldering iron station LA 60 - Multifunctional

The stacking stand not only raises a stacking tray but also an integrated water tank which simply needs to be filled and,



A glance at the internal operation of the soldering iron shows the high quality construction with ceramic, internally heated soldering iron tip 1, fixed by swivel nut 2. The precision sensor is located directly at the junction of the soldering tip on the ceramic heater 3.

on pressing a button, wets the sponge located in one of the drawers below. The drawer is remote controlled via a motor connected via a cable to the soldering station.

Remote control without a cable connection to the drawer is possible by using a battery which, in turn, extends and retracts the drawer.

High quality soldering irons

The soldering iron is a particularly high quality, ergonomic and safe model with a tip that can easily be changed using the screw fittings provided. The new ELV soldering station operates with an absolute temperature measurement by means of a high quality temperature sensor which is located in the ceramic heating element of equally high quality and always establishes the actual temperature of the soldering tip very accurately. Thus, the soldering station is suitable for soldering work involving critical temperatures.

The sum of all the features, which include an equalization of the potential, results in the innovative LS 60 soldering station, a new generation of solutions not only for private use but also in service industries, workshops, industry and has an interesting price:performance ratio. The wide range of tips and high degree of variation of combinations involving the basic unit and soldering station, the LS 60 is designed for use in practically all areas of electronics and electro-technology.

Komfort soldering station: Basic unit LS 60 and soldering iron 60 W
Order No.: 17-317-23

Soldering station LA 60

with solder sponge, water tank, cable
Order No.: 17-317-13

Spare sponge

Order No.: 17-354-21

Soldering iron 60 W with lead tip sharpener, screw-on soldering tip 0.8 mm
Order No.: 17-317-26

Complete soldering station with basic unit S 60, soldering station LA 60 and soldering iron 60 W
Order No.: 17-317-25

Spare tips

Name	Order No.
lead tip, ø 0.4 mm	17-317-27
lead tip, ø 0.8 mm	17-317-28
lead tip, ø 0.8 mm Slanted 45°	17-317-29
ø 1.2 mm, Slanted on both sides	17-317-33
ø 1.6 mm, Slanted on both sides	17-317-35
ø 3.2 mm, Slanted on both sides	17-317-34
ø 4.8 mm, Slanted on both sides	17-317-31
ø 5 mm, Slanted 45°	17-317-30



ALC 1000

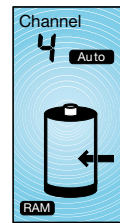


The New Battery Charging Center - Charge With Style

3 programs for battery care:

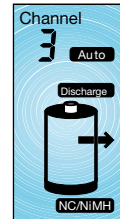
Charging

Battery identification and initiation of the charging process is performed automatically after the battery has been inserted. Charge to 100 % capacity and then a pulse compensatin charge.



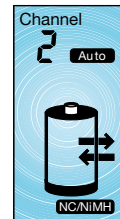
Discharge

Only discharge the battery to its stop discharge voltage level.



Discharge/Charge

Discharge to the final discharge voltage and then charge automatically with transition to compensation voltage.



An innovative charging technology, which even supports the new types of battery, such as cells produced according to the RAM technology, ensures correct battery care and the best charging results. During its conception phase, particular attention was paid to battery care and ease of operation.

The individual charging bays of the ALC 1000 operate independently from each other, are monitored individually and can be operated with different programs simultaneously.

Simple operation

A clear LC display provides constant information on the function currently being performed.

Simple operation does not mean a reduction in operating elements for the new ELV charging unit series, thus avoiding the need to access various functions with just a few buttons by laboriously working through endless menus.

Simple operation means that the battery only needs to be inserted in the bay (regardless of the charging status and battery type). Everything else, e.g. battery identification, is performed automatically by the charging unit. When the battery has reached its full capacity, it can be removed or remain in the bay (compensation charge) so it remains available full charged.

The various programs can be called in 5 operating buttons. Operation is aided by clear graphic user guidance supported by a large display. Clear function buttons basically make the operating manual superfluous.

High level of flexibility

The charging unit also enables charging of a mixture of batteries involving different technologies, all of which can be processed by the microprocessor at the same time. To do this, all the charging and discharging functions can be con-

trolled separately for each charging bay. After inserting the battery in the charging bay, select the required program for battery care via the operating buttons. If no manual selection is made, charging begins automatically after about 5 seconds. The battery identification is performed by the charging unit automatically.

Batteries under strict control

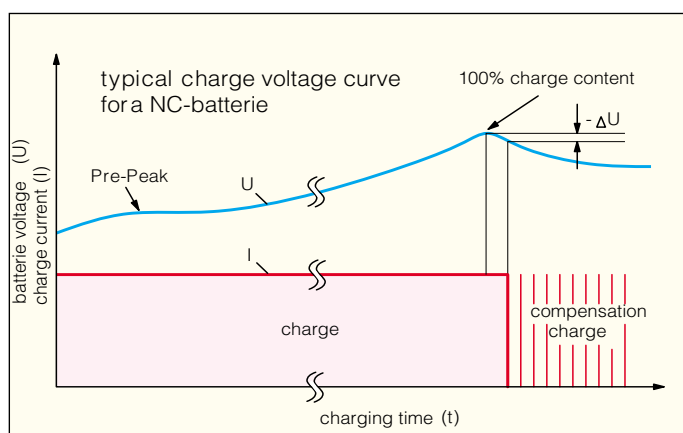
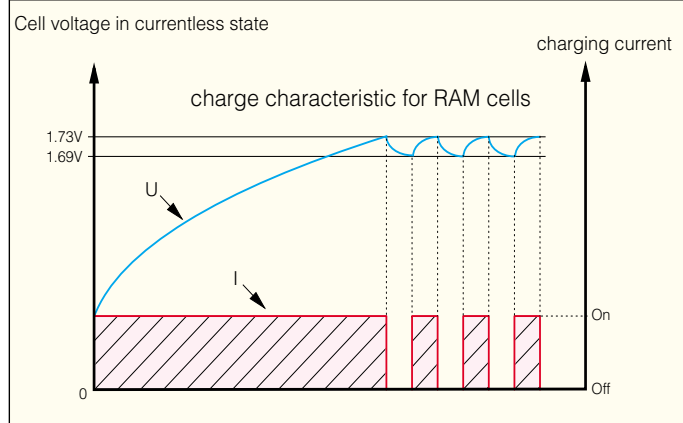
During the charging process, the microcontroller monitors the voltage progress for each individual battery to an accuracy of 14 bit. Several successive measured values are used to evaluate the charge curve.

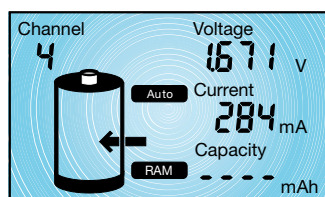
In order that transition resistances on the terminal strips do not influence the measurement results, the battery voltage scanning always starts in a currentless state. In the case of NC and NiMH batteries, the end of charging detection is performed at the end of the charge curve according to the particularly accurate negative voltage difference method. The battery has been charged with its maximum load when a voltage drop of 3 mV or more is registered over several measuring cycles. This charging bay is then switched to compensation charge by the processor to compensate for any charge loss through self-discharge. The charging of "RAM cells", on the other hand, is performed using a constant voltage. In this case, the end of charge voltage of 1.73 V in currentless state and the wasted cell voltage of 1.69 V play an important role.

Order No.: 17-384-06

Battery Charging Center ALC 1000

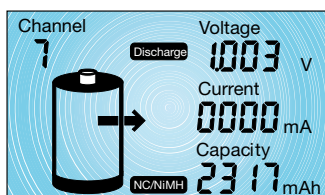
- Suitable for quickly charging NC, NiMH and RAM cells
- 5 independent charging bays
- Automatic battery type and technology detection
- Simple operation with graphical user guidance
- Separate monitoring and control of the individual bays
- Different charging programs for specific battery care





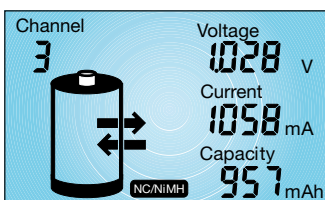
Charge

Battery identification and start of the charging process occurs automatically. Charging is performed to 100% capacity. Then pulse compensation charge.



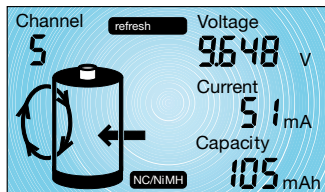
Discharge

Discharging the battery to its total discharge voltage. Display of discharged capacity.



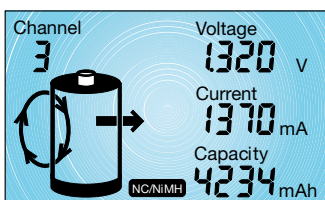
Discharge/Charge

Discharge, the automatic charging with display of discharged capacity.



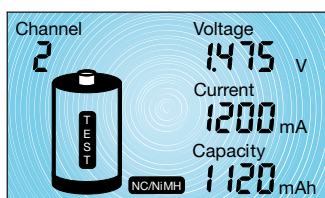
Refresh

By applying a current pulse, a possible cell discharge can frequently be cleared. This is followed by several charge/discharge cycles.



Regenerate cycle

Run down or damaged cells should run through the charge/discharge cycle until no more capacity increase can be detected. Then switch to compensation charge.



Test

Complete charge/discharge cycle with measuring and display as well as automatic full charging and transition to compensation charge.

ALC 1000/2000 Expert



Order No.: 17-384-08

Gives run down batteries a new lease of life - the ALC 2000 Expert can manage up to 10 batteries at the same time!

The top model within the new ALC series from ELV for the simultaneous and independent management of up to 10 batteries of the types NiCd and NiMH as well as RAM cells. Easy operation, full view of data and functions for each battery and 6 intelligent battery handling programs distinguish this first class charging unit.

Mix batteries as desired

The batteries inserted in the 10 charging bays is completely flexible, e.g. 8 round cells of various types and 2 x 9 compound batteries. As a result of the fully independent management of the batteries, even fully run down or damaged batteries can be inserted in any bay at the same time others are inserted in the unit for regular charging.

Control and operation - clear and simple

Standard operation simply involves inserting the battery - and that's it. The charging unit detects the battery type and technology automatically, and begins the charging process immediately the battery is inserted correctly and, when the charging process has been completed, automatically activates compensation charge. In the case of extended functions, the operating buttons are used to select the required program to manage the batteries. Press the corresponding button and the large back-lighting LCD displays the most important data for each battery, such as voltage, charging current and lost capacity (refer to view of the display for the ALC 1000 Expert). In order to establish the status of all the

ALC 1000 Expert / ALC 2000 Expert

- Suitable for quick charging NC, NiMH batteries and RAM cells
- ALC 2000 Expert has 10 separate, independent charging bays, the ALC 1000 Expert 5 charging bays
- Automatic battery type and technology detection
- Large, back-lighting, multifunction display
- Simple operation with graphical user guidance for all models
- Separate monitoring and control for each individual charging bay
- Display of voltage, current and capacity
- 6 different charging programs for best possible battery care, data retention following power failure
- Slow charging with reduced charging current (ALC 2000 Expert only)
- Integrated, temperature controlled fan (ALC 2000 Expert only)

batteries (charge/discharge/compensation charge) at a glance, the corresponding LEDs are provided on each charging bay.

Charging - intelligent, quick and battery-friendly

The unit charges NiCd and NiMH batteries according to the ΔU method. Charging occurs as quick charging. RAM cells are charged using constant voltage with the switch off criteria end of charge voltage and wasted cell voltage. To eliminate interfering transition resistances during voltage measurement, it is performed currentless. After charging, the battery can remain in the unit as long as required. Self-discharge is prevented during storage and the battery always retains its full capacity. An summary of the 6 charge/discharge programs available is provided on the left.

ALC 1000 Expert

As the ALC 2000 Expert, but with 5 charging bays, no slow charge program and no integrated, temperature controlled fan.



Order No.: 17-384-09

Battery Charge and Measuring Instruments Series ALM

The ALM series is designed for automatic charge, discharge, test, servicing*, refreshing** and regeneration of NiCd, NiMH, Lilons*** and SLA* batteries. The batteries are charged safely and quickly, using the newest charging technology voltage gradient evaluation and -DU-detection. Furthermore the ALM series is convincing with additional features such as multiple safety functions, easy operation, large voltage ranges up to 30V and RS-232-interface**.

Main functions:

- Innovative battery charging
- Discharge
- Testing
- Servicing
- Refresh
- Regenerate
- RS232-Interface



	max. charge current (A)		max. discharge current (A)	max. charge voltage (V)		rechargeable battery					charge outputs	digital display	super-fast charge (15min)	optional temperature sensor	functions							serial interface	Order No.:
						NC	NiMH	Lilon	lead	lead-gel					charging	discharging	test	servicing	refreshing	regeneration	direct choose of		
ALM 7003	1	1	18	●	●	-	-	-	-	1	3 digits	-	-	●	●	●	-	-	●	-	-	-	17-240-55
ALM 7004	1	1	18	●	●	-	-	-	-	1	4 digits	-	-	●	●	●	●	●	●	●	●	●	17-240-56
ALM 7010	3,5	3,5	30	●	●	●	●	●	●	2	4 digits	●	●	●	●	●	●	●	●	●	●	●	17-291-22
ALM 7010M	3,5	3,5	30	●	●	●	●	●	●	2	4 digits	●	●	●	●	●	●	●	●	●	●	●	17-291-28
ALM 9010M	5	20	32	●	●	-	●	●	●	2	4digits	●	●	●	●	●	●	●	●	●	●	●	17-351-24
PML 9001M	6	6	18	●	●	-	●	●	●	6	6x3 digits	●	●	●	●	●	●	●	●	●	-	-	17-252-11

Power Supply Units

PS 7330

Laboratory power supply unit
0-30 V/0-3 A

SPS 7330

Switching power supply unit
0-30 V/0-5 A

PS 9031

Power supply unit
0-30 V/0-10 A

DPS 9000

Double power supply unit
2 x 0-30 V/0-2 A

SPS 9001

Switching power supply unit
0-30V/0-20 A

SPS 9040

High performance switching power supply unit
0-40V/0-25 A

PS 9530

Processor power supply unit
0-30V/0-10 A

SPS 9540

High performance processor power supply unit
0-40V/0-25 A



Sophisticated Power Supply Technology

Our range of power supply units ensure practically all possible power requirements in the laboratory or workshop. Our broad spectrum of compact, high performance, universal power supply units leave nothing to be desired in respect of operating and display comfort. These power supply units distinguish themselves by implementation of the latest switching technology, temperature-controlled ventilation technology, compact, space-saving design and excellent performance data. All the units are equipped with easily legible digital displays, separated for voltage and current. The power supply units are described in detail on the following pages.

- Permanent short circuit-proof
- Thermal fusing
- Digital displays for current and voltage
- Temperature-controlled automatic ventilation
- Modern switching technology for maximum performance with minimum loss

ELV[®] TimeMaster

Electronic time registration

is cheaper than you think!

Because of flexible working and operating hours and the necessity of differentiated time calculations the automatic and efficient registration and evaluation of time data becomes more and more important. Even small and middle-sized companies today depend on reliable time registration systems.

ELV-TimeMaster is a convincing and economical solution for your special needs. Whether for a single system with only a few employees or a big network solution - ELV-TimeMaster fits all of your individual needs.

You chose only those components, which are really needed. And this at an unbelievably low price!

ELV-TimeMaster

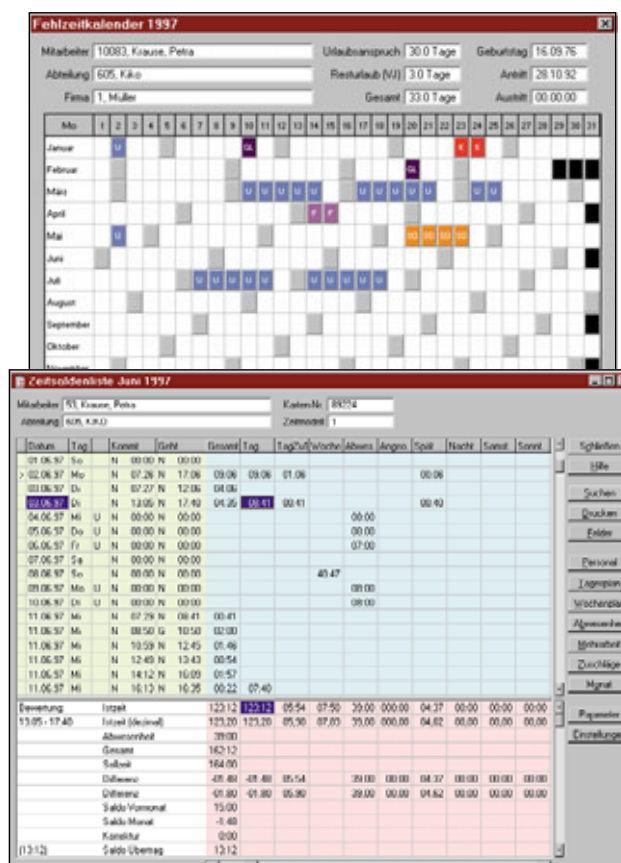
The modern solution for:

- time registration
- flexible evaluation
- access authorization
- operation planning

That means for you:

- more flexibility
- satisfied customers
- motivated employees
- transparent costs

Evaluation software of ELV-TimeMaster



Attractive Features

- clearly arranged time balance sheets
- completing time registration
- error logging
- absentee lists for employees
- vacation planner for departments and companies
- individual adaptation of evaluation software
- automatic holiday registration
- freely definable absentee times
- overtime gratification definitions
- arranged overtime
- definition of required monthly working hours
- automatic printing of time sheets
- automatic data backup
- automatic reorganization
- individual access authorizations (comfort module)
- anniversary calendar
- calendar function
- absentee lists (chief module)
- time balance management (flexible working hours module)
- time balance overview (flexible working hours module)
- daily reports (chief module)
- transfer protocols (chief module)
- evaluation of terminal access (chief module)
- flexible branch controlling (branch module)
- import of master data
- export of master data
- export module for wage calculation programs
- modular structure
- cleanly structured system
- free configurable tool bar
- start up using simple key combinations
- max. 9999 employees
- max. 999 departments (department module)
- max. 999 companies (client module)
- max. 999 branches (branch module)
- max. 999 daily time models
- max. 999 weekly time models
- max. 999 shifts (shift module)
- max. 999 calendar week controls (shift module)

System Extensions:

ELV-TimeMaster can be easily and quickly designed for your individual needs by adding available modules and components. Furthermore it can be used in conjunction with the practice oriented personnel operation planner EURO-PEP which is also available.

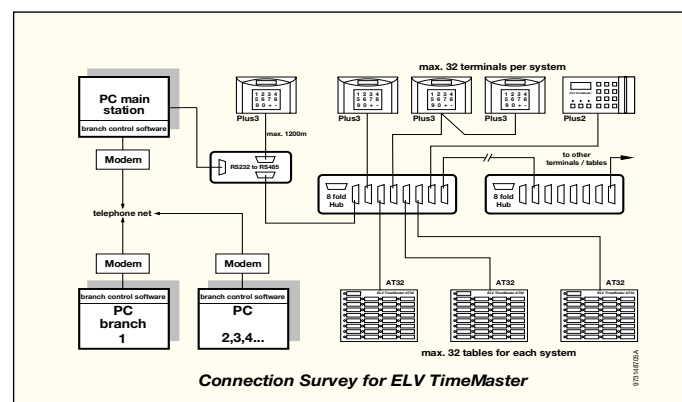
- main module
- department module
- company module
- branch module
- flexible working hours module
- shift module
- comfort module
- chief module
- network module
- access authorization module with door opener
- comfort access authorization module
- data export modules for popular wage calculation programs
- terminal „Plus 3“ in plastic case (white or gray)
- terminal „Plus 2“ in metal case (black)
- tables for employees' attendance supervision with 32 displays on each table
- switch interface with 2 relays
- 8 fold interface converter for connection of more terminals

System Requirements

ELV-TimeMaster for Windows can be used on any PC with Windows 3.1/95. For improved working speed the following system data are required:

- PC with 486-processor, 66MHz
- 4MB RAM
- 10MB free disc space

Attractive terminals for every room



New: TimeMaster with touchless transponder technology



Order No.: 17-202-72

Complete System „plus 4” Win. 95/98/NT/2000

Compilation terminal "Plus 4" in a non-wearing design through use of transponder technology, durable membrane keyboard, LCD and accounting memory for 1800 records in offline mode



Order No.: 17-202-70

Complete System „plus 5” Win. 95/98/NT/2000

Design housing with touch screen, accounting memory for 2000 records in offline mode, option to download replaceable operating system software and integrated door opener relay.

SpeedyPick

Reducing costs and increasing efficiency in warehouse and mailing



Up to 200% increase of commissary ability with same number of employees and warehouse area.

Pronounced reduction of packaging and mailing errors

Employees can start work with almost no training and can be more flexibly used

Simultaneous roll on and roll off and parallel commissary capabilities

Automatic real time inventory

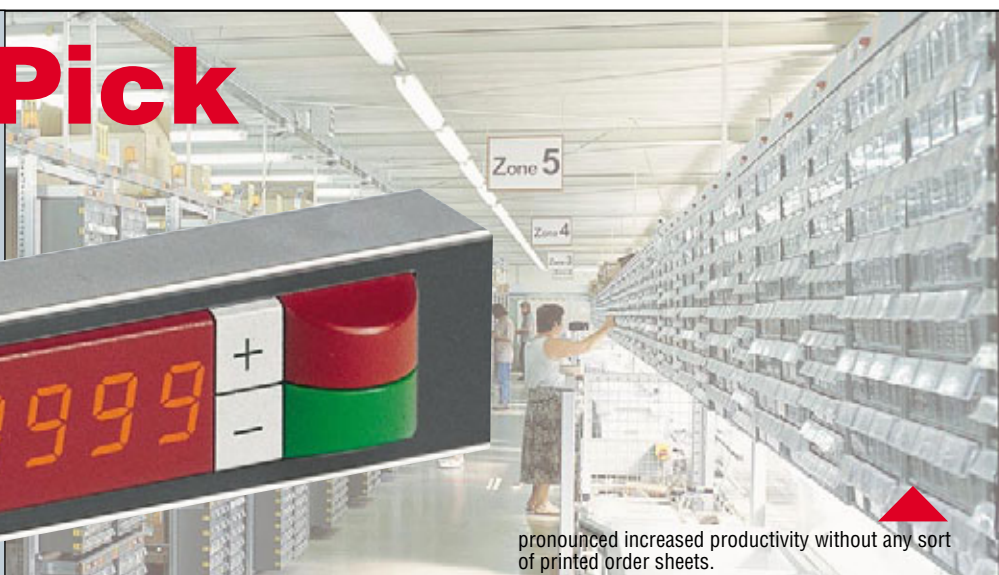
extent of delivery:

warehouse bay's modules Number according to your individual needs

warehouse consignment preprocessor

Mounting accessories

include profiles for assembly of the warehouse bay's modules and the complete control wiring.

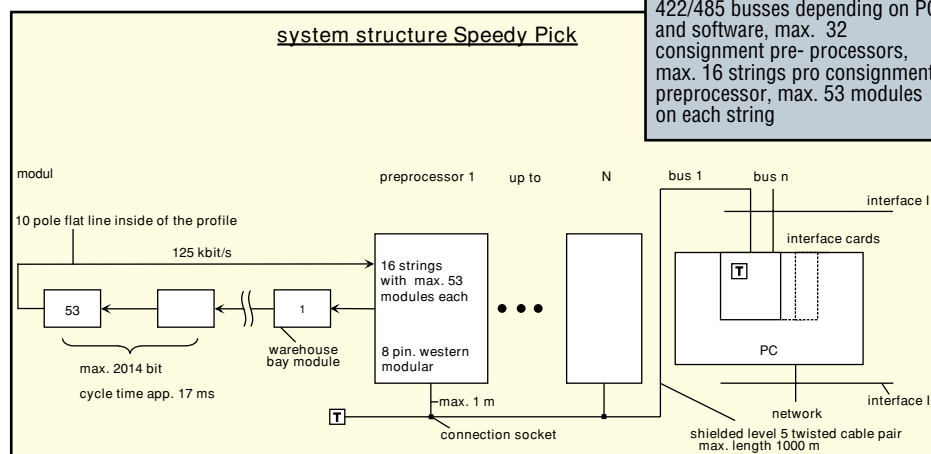


pronounced increased productivity without any sort of printed order sheets.

Electronic warehouse bay's modules:

- electronic warehouse bay's which automatically shows which item is to be selected.
- the display with its functional design and large and well lit numbers shows the number of items to be picked.
- the completed operation is confirmed by using the rugged acknowledge button. The warehouse inventory is automatically updated.
- 2 correction keys, „+“ and „-“ , allow immediate correction of inventory
- the well conceived design and placement of each key prevents errors

maximum system configuration: 422/485 busses depending on PC and software, max. 32 consignment pre-processors, max. 16 strings pro consignment preprocessor, max. 53 modules on each string



ELV® - Competence in Electronics

Bug detector WF 1



The WF 1 bug detector is used for detecting audio and video mini-spies with transmission frequencies in the range from 5 MHz to over 4 GHz.

Mini-transmitters (bugs) are becoming more and more widely used. Particularly in this age of eavesdropping and growing commercial crime, one can no longer feel safe with regard to undesirable listeners or watchers. Even in the private sector, eavesdropping is certainly not a rare event thanks to cost-effective and easily obtainable listening devices.

The WF 1 is likewise suitable for both the private and the business sector and will detect signals from mini-spies over a wide frequency range from 5 MHz to over 4 GHz. As a result of this, 2.4-GHz video transmitters can also be reliably detected. Thanks to the use of the latest components, the WF 1 has sufficiently high sensitivity that even mini-spies with low transmission power can still be reliably detected.

Additional features:

- simple operation, no tuning required, as the whole range is received at the same time. Also suitable for the layman.
- high sensitivity, adjustable
- LED and additional acoustic indication
- retractable telescopic antenna
- easily portable case

Complete unit
Order No.: 17-478-20

Technical data: WF 1

Frequency range:	5 MHz – at least 4 GHz
Sensitivity (adjustable):	typ. 30 µV to 2 GHz then reducing to 120 µV at 4 GHz
Reception principle:	straightforward receiver
Input impedance:	50 Ω
Indication:	optical and acoustic
Voltage supply:	9V block (not included)
Current consumption:	max. 60 mA
Operating time:	approx. 10 hours
Dimensions (W x H x D):	60 x 154 x 25 mm
Weight:	approx. 150 g incl. battery

• Design • Research and Development • Production

For more information please contact:

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