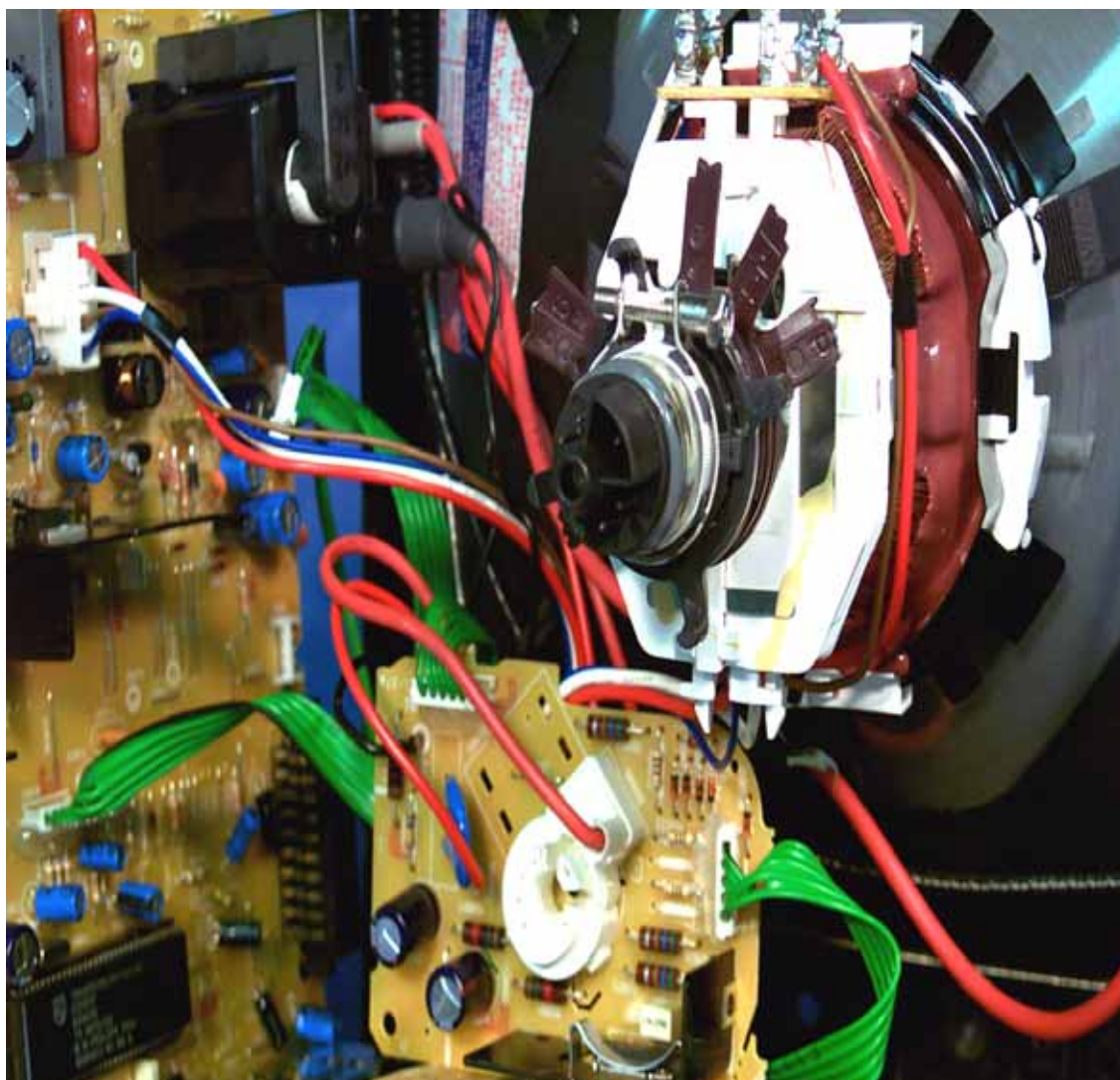


Electron S.R.L.

Design
Production &
Trading of
Educational
Equipment

B44 SERIES – VIDEO/AUDIO/RADIO TRAINERS



B4410-B – STEREO HI-FI AMPLIFIER (board version)



This trainer is a high-performance Stereo amplifier of the latest design.

The unit has inputs which accept:

- Turntables
- CD players
- Tape recorders
- FM tuners
- Microphones

The front face of the trainer is made of green, fiberglass, on which are mounted all the components. This clear and rugged structure, allows an easy understanding of the electronics to be studied.

Fault simulation by 8 microswitches concealed under a cover accessible to the instructor

In addition to this manual fault simulating system the trainer is fully compatible with the B1180-WS Laboratory Student Workstation. The B1180-WS provides a PC based fault simulation system, virtual instrumentation (optional) and all the power supplies required for the trainer.

A dedicated system CD is supplied containing the software for fault simulation and trainer documentation.

In cases where the advanced features of the B1180-WS are not required, a simple power supply delivering +15/-15V stabilized supply should be provided. Use of the B4192 power supply is recommended.

Features:

- Output power: 5W RMS each channel

- Distortion: 0.1% at 2W
- Load impedance: 4 or 8 Ω
- Frequency response: 20 to 20kHz
- Inputs: Tuner/Tape, Phono, Aux

- Separate bass and treble controls

The trainer consists of the following functional blocks/subsystems:

- Input section with separate impedance matching/equalizing networks on the 3 inputs.
- Low-noise preamplifier
- Tone/Volume/Balance control stage
- Power amplifiers, with thermal protection

Study topics:

- The input amplifier: measurement of gain, frequency response, input impedance.
- Tone/Levels Stage: recording of frequency characteristics for various settings of the tone controls.
- Power stage: measurement of frequency response, output power, output impedance
- Troubleshooting of simulated faults.

The trainer comes complete with a pair of compact-size speaker boxes, Connector and accessories kit and an extensive instructions manual

Ordering code:

B4410 B

B4410-P – STEREO HI-FI AMPLIFIER (panel version)



This trainer is a high-performance Stereo amplifier of latest design.

The unit has inputs which accept:

- Turntables
- CD players
- Tape recorders
- FM tuners
- Microphones

The trainer has an open structure so that each aspect of the electronics can be easily studied.

The system is equipped with a fault simulation system, programmable by concealed micro switches. A total of 8 faults can be simulated, covering all system sections.

Features:

- Output power: 30W RMS each channel
- Distortion: 0.1% at 5W
- Output impedance: 4 Ω
- Frequency response: 20 to 20kHz
- Inputs for piezo-ceramic and magnetic transducers
- Separate bass and treble controls

The trainer consists of the following functional blocks/subsystems:

- Input section with separate impedance matching/equalizing networks for magnetic, piezo and phono sources
- Low-noise preamplifier

- Tone/level/balance control stage
- Power amplifiers, with thermal protection
- Anti-bump circuit to protect the speakers from power hits at switch on
- Fully protected power supply from AC mains at 110-120 or 220-250V, 50-60Hz (to be specified while ordering)

Study topics:

- Study of input amplifier. Measurement of gain, frequency response, input impedance.
- Tone/Levels Stage: recording of frequency characteristics for various settings of the tone controls.
- Power stage: measurement of frequency response, output power, output impedance
- Troubleshooting of simulated faults.

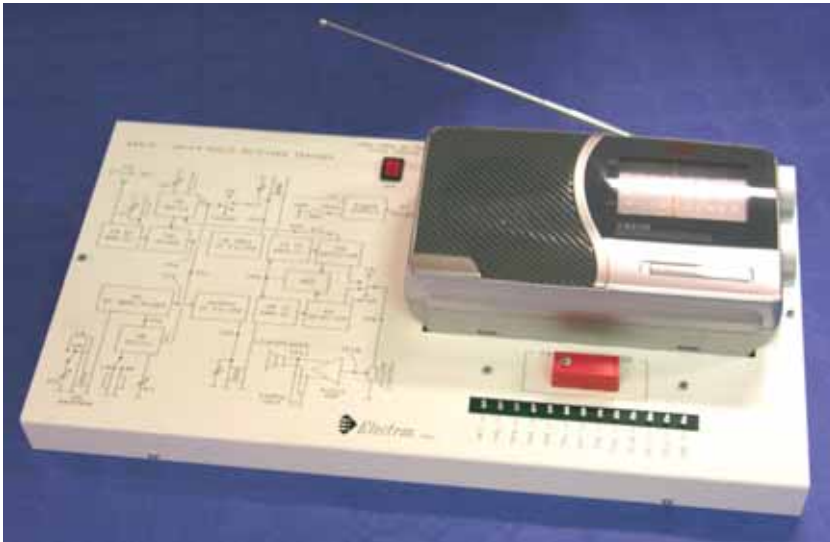
The trainer is built in the panel form, consisting in a rugged metallic enclosure, with a large window, protected by a transparent plastic cover. The PCB, with test and measurement points is accessible by removing this cover.

The trainer comes complete with a pair of compact-size speaker boxes, Connector and accessories kit and an extensive instructions manual.

Ordering code:

B4410 P

B4415 – AM/FM RADIO TRAINER



This trainer is designed for use in courses of basic radio engineering as well as in advanced ones.

The trainer is based on an up to date commercial type of equipment, transformed to facilitate the execution of tests and experiments.

The trainer includes a clear synoptic, with test points and calibration controls, in addition to a detailed block diagram of the set. The students can therefore easily locate the various sections of the electronics and proceed efficiently with the experiments.

The experiments are graded from the basic understanding of AM/FM radio operation to the more engaging procedures of troubleshooting. The system is indeed provided with a fault simulating system, actuated by switches accessible to the instructor.

The power supply of the set is from 220 V, 50 Hz AC mains. Special safety provisions are included to make the use of the trainer hazard-free.

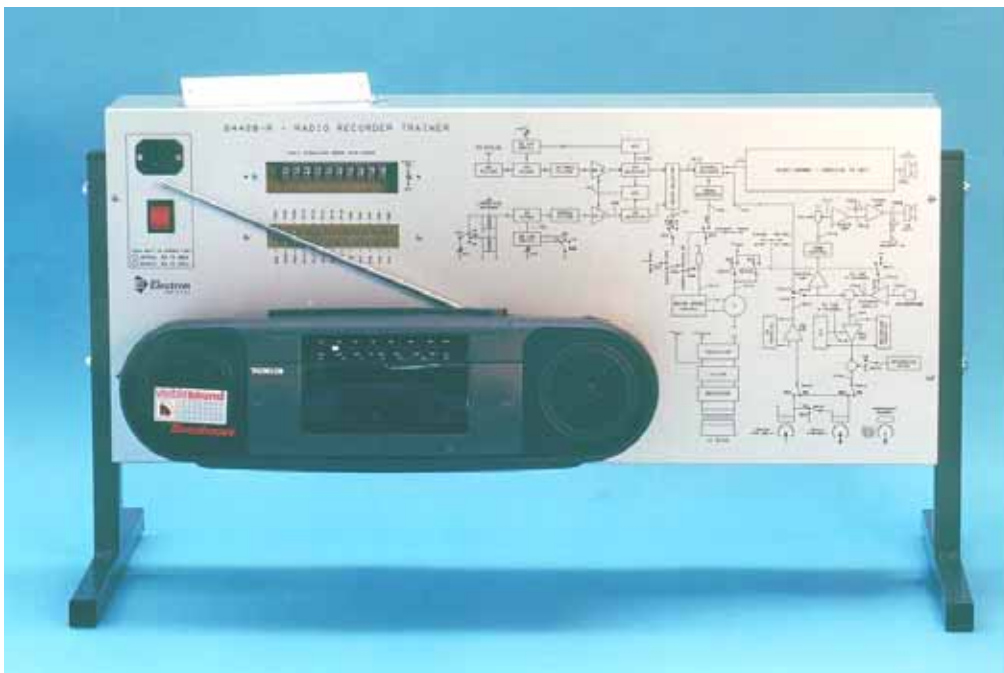
The trainer is supplied with cabling accessories and instruction manual

Ordering code:

B4415

DUE TO CONTINUOUS UPGRADING OF THE ORIGINAL EQUIPMENT, THE PHYSICAL APPEARANCE OF THE FRONT PANEL OF THIS TRAINER MAY CHANGE. THIS MAKES NO DIFFERENCE IN THE EDUCATIONAL QUALITY OF THE TRAINER ITSELF.

B4420-R – RADIO RECORDER TRAINER



This trainer consists in a commercial apparatus of renowned quality, transformed for didactic use.

The front panel of the trainer displays a clear silk printing of the system functional block diagram. Test points for measurements and execution of the experiments are also made available on the front panel. A complete study of each aspect of the system is therefore possible.

The trainer also includes a fault simulator. A total of 10 faults can be inserted by operating a set of micro switches which are concealed under a cover, which is accessible to the instructor.

The fault simulator enhances the skill of the students in troubleshooting techniques.

Technical specifications:

Radio section:

- AM and FM operation
- Tuning range for FM: 87.5 to 108 MHz
- Tuning range for AM: 525 to 1620 kHz

- Stereo operation for FM

Tape section:

- Dual tape deck, stereo operation
- Cassette tape, 4 tracks, two channels
- Capability of recording at normal (4.76 cm/sec) and high speed (9.5 cm/sec)
- Frequency response 40 to 16,000 Hz
- On-board microphone with automatic level control (ALC)
- Headphone output jack

Other characteristics:

- Two on-board speakers, 2W each
- Power supply from AC mains, 110 or 220 V, 50 to 60 Hz (specify while ordering)
- Cabinet size (synoptic board, legs excluded) approx. 780 x 340 mm
- Weight: 7 Kg

Ordering code:

B4420-R

DUE TO CONTINUOUS UPGRADING OF THE ORIGINAL EQUIPMENT, THE PHYSICAL APPEARANCE OF THE FRONT PANEL OF THIS TRAINER MAY CHANGE. THIS MAKES NO DIFFERENCE IN THE EDUCATIONAL QUALITY OF THE TRAINER ITSELF.

B4425 – CD AND DIGITAL VIDEO DISK (DVD) TRAINER



The trainer consists in an advanced apparatus of a renowned commercial make, transformed for didactic use.

The trainer is implemented in a portable case suitable for desktop use.

The front panel of the trainer includes:

- A clear synoptic displaying the functional blocks of the unit.
- The electronic circuits, visible for easy inspection and simplified reference with the synoptic diagram. The electronics is protected against mishandling by removable transparent cover.

The trainer is provided with a fault simulation system to train students in troubleshooting techniques, as well as to enhance their understanding of system operation.

The programmable faults cover all subassemblies/sections of the system and are conceived to train students to locate faults by precisely following a logical guideline from symptom to the possible cause of misoperation.

The faults are programmed by operating keys, which are concealed by a cover.

In addition to this manual fault simulating system the trainer is fully compatible with the B1180-WS Laboratory Student Workstation. The B1180-WS provides a PC based fault simulation system and virtual instrumentation (optional).

A dedicated system CD is supplied containing the software for fault simulation and trainer documentation.

The Standard of the DVD player is for the European Area. The trainer is complete of one compatible disk, to allow the didactic use of the trainer in other Areas.

Technical Specifications:

- Ability to operate both DVD (video disk) and CD (audio compact disks)
- PAL/NTSC standard without transcodification.
- Digital and analog signal outputs in all common standard formats
- Standard EURO AV socket
- SVHS output
- Remote controller
- Power supply: from AC mains at 220-230V, 50Hz

Ordering code:

B4425

DUE TO CONTINUOUS UPGRADING OF THE ORIGINAL EQUIPMENT, THE PHYSICAL APPEARANCE OF THE FRONT PANEL OF THIS TRAINER MAY CHANGE. THIS MAKES NO DIFFERENCE IN THE EDUCATIONAL QUALITY OF THE TRAINER ITSELF.

B4431 - EDUCATIONAL FAULT FINDING COLOR TV TRAINER



The trainers consist of TV receiver systems of the latest design, constructed in sturdy portable cases, suitable for desktop use.

Features:

- Clear synoptic diagram displaying the functional blocks and component identities
- Front-mounted electronic circuits for easy inspection and simplified reference with the synoptic diagram.
- Electronic circuits have a transparent plastic cover, which ensures complete safety
- The cathode-ray tube, 14" diagonal (13" for NTSC)

Technical Specifications:

- System: PAL B, G, SECAM B, G, K, NTSC only from AV input socket
- Diagonal Screen 14"
- Program memory: 49 + 1 AV position
- Sockets: AV socket for VCR, videogames etc.
- Remote control: Infrared
- Channel selection: From 01 to 99
- Power supply: 220 -250V 50 to 60 Hz
- Cabinet size (approx): 970 x 620 x 385 mm

Troubleshooting

All the trainers are equipped with a microprocessor-based fault simulation system, for training troubleshooting techniques, and enhancing understanding of system operation.

The programmable faults cover all sub-assemblies/sections of the system and are conceived to develop a logical diagnosis of the symptom and possible cause of the defect.

Faults are preset by entering the appropriate component code on a keyboard, an LCD display indicates the system condition.

The faults are automatically reset when the student precisely locates the component or group of components concerned and types in the correct code.

All the attempts performed by the student are stored in the system memory and can be retrieved and checked by the instructor for evaluation.

Ordering code:

B4431

DUE TO CONTINUOUS UPGRADING OF THE ORIGINAL EQUIPMENT, THE PHYSICAL APPEARANCE OF THE FRONT PANEL OF THIS TRAINER MAY CHANGE. THIS MAKES NO DIFFERENCE IN THE EDUCATIONAL QUALITY OF THE TRAINER ITSELF.

B4450 – COMMUNAL TV ANTENNA SYSTEM



General:

The trainer is a model of a communal aerial system constructed on the front face of a sturdy portable cabinet.

The front panel is silk-screen printed with the system diagram that clearly shows the various component modules and their wiring.

The unit is conceived as a demonstration system on which to carry out experiments and measurements, the layout is as complete as possible and includes the widest variety of elements encountered in practice.

The following features are included on the trainer:

Features:

- Wideband power amplifier
- Separate band I, II, III+S, IV, V and UHF amplifiers
- Tunable channel-reject filter
- 4-Way Splitter
- 2-Way Splitter
- 4-Way Tap
- 14 user outlets, with attenuation ranging from -22 to 0dB
- 1 adjustable 0-20dB attenuator
- TV/SAT Mixer
- TV/SAT Demixer
- A total of 90m coax cable, drum-wound and contained in the cabinet.
- 1 Panel antenna

Study topics:

- Layout and structure of communal aerial systems on one, two, three columns
- Characteristics and operation of components for communal systems
- Measurements on components and cable attenuation
- Chain distribution and drop-out level assessment rules and measurements
- Nodal distribution
- Wideband power systems and band amplifiers for I, II, III+S, IV, V and UHF
- Level assessment and adjustment for multiple wideband system
- Use of channel-reject filters

Ordering code:

B4450

B4452 – TV ANTENNA TRAINER



The photo does not show the antennas and other accessories provided

General:

The trainer is a model of a TV aerial system constructed on the front face of a sturdy portable cabinet.

The front panel clearly shows the various component modules and their wiring.

The unit is conceived as a demonstration system on which to carry out experiments and measurements.

Features

- VHF and UHF band amplifiers with separate gain level adjustment
- VHF/UHF mixer

- Wideband power amplifier
- Power supply from AC mains 220-240V_{AC} 50 to 60 Hz
- Signal divider/distributor
- 2 user outlets with different attenuation
- Coaxial cable, 5m
- VHF and UHF antennas with cable
- Meter/indicator to help antenna orientation

The trainer is supplied complete of minor accessories and instruction manual.

Ordering code:

B4452

B4465 VIDEO SATELLITE RECEIVING SYSTEM



General:

The B4465 is a complete system for reception of TV signals from all satellites of the Mediterranean, Middle East and Asia regions: ASTRA, EUTELSAT, (HOT BIRD) and others.

The system is organized to be used as a training instrument and consist of the followings:

- Parabolic antenna, 60 cm diameter, offset type, with LNB
- Antenna mounting and cabling accessories
- Receiver, with the following major features:
 - 22 kHz tone to control external antennas
 - 199 pre-selectable channels
 - 2 GHz tuner (920 – 2050 MHz)

- Compatible also with ASTRA I D satellite
- UHF output modulator (CH 30 – 45)
- Remote controller

The system is supplied with all accessories and facilities to make installation and use simple and efficient.

NOTE: An alternative version of this trainer has now become available. This new version is for reception of digital satellite signals.

Ordering codes:

- B4465-A Analog video satellite receiving system
- B4465-D Digital video satellite receiving system

B44-YDC 868-4 – PAL COLOR PATTERN GENERATOR



This generator, consisting of monolithic processor, color encoder, control circuit, produces 16 types of test signals of PAL and NTSC by the software.

The picture is clear and stable, guaranteed from the effect of temperature, humidity and pressure

Television system: PAL, NTSC

Video output: 1Vpp

Picture functions

- Color bar:
- Black.
- Central cross
- Grids
- Spots
- White, Red, Green, Blue.

B44-SM2500 – DIGITAL SATELLITE METER WITH SPECTRUM ANALYZER

This meter is simple and convenient for setting and aligning a satellite dish. Using the parameters of satellite, you can set and align a satellite dish quickly, easily and accurately.



SPECIFICATIONS:

System capabilities	Fully DVB compliant	YES
LNB	Connector	F type, male
	Frequency range	950MHz - 2150MHz
	Signal level	-65dBm ~ -25dBm
	LNB supply	13/18V, max 400mA
	LNB switch control	22KHz
	DiSEqC	Ver 1.0
Demodulator	Front end	QPSK
	Symbol rate	2Mbps ~ 45Mbps
	SCPC and MCPC Capable	Yes
	Spectral inversion	Auto conversion
System resource	Processor	32bit (133MHz)
	SDRAM	16mb
	FLASH	2mb
	EEPROM	8kb
Video decoder	MPEG2	Main Profile - Main Level
	Data rate	up to 15M bit/s
	Resolution	720 x 576, 720 x 480
	Video Format	PAL, NTSC, SECAM
Serial data interface	Connector USB	