



type 2425

Electronic Voltmeter

FEATURES:

- True RMS detector with 40 dB range and 5:1 (14 dB) crest factor capability
- Average detector with vu response
- Positive, Negative and Max. Peak detector with 50 μ s rise time
- Peak Hold function
- Linear frequency response from 0,5 Hz to 0,5 MHz
- Indication of volts, dBV and dBm
- "Fast" and "Slow" meter time constants
- Sensitivities from 1 mV to 300 V FSD

- Calibrated Amplifier with line-level output
- Input for external meter time constants
- Mains or external battery operation

USES:

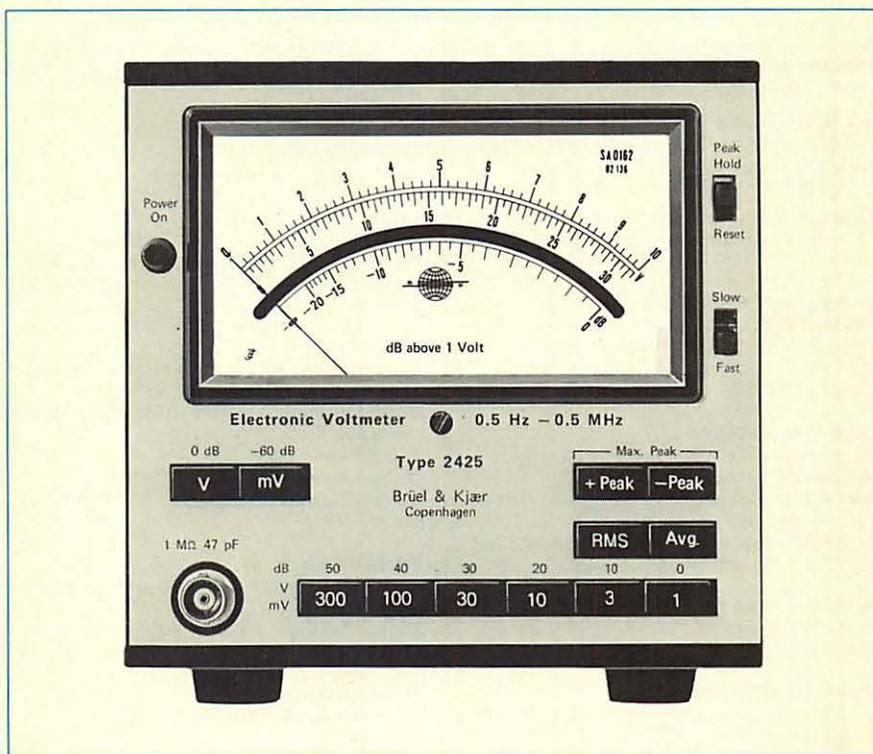
- Measurement of true RMS, -Peak, +Peak, Max. Peak and Average voltage
- Calibrated amplifier
- General purpose voltmeter
- vu measurements

The Type 2425 Electronic Voltmeter is a versatile general purpose voltmeter. It has a full-scale measurement range of 110 dB from 1 mV to 300 V full-scale, manually switched in steps of 10 dB. The linear scale (fitted as standard) can be replaced by scales calibrated for dBm and vu measurements. The voltmeter can be powered from an AC mains supply or by two batteries of 22V to 35 V each.

The 2425's true RMS rectifier has a dynamic range of 40 dB and can handle signals with a crest factor of 5:1 (14 dB). The Average detector, when used with the meter response set to "Fast", conforms to standards for vu measurements. The Peak detector has a rise-time constant of 50 μ s with the "Fast" response selected (500 μ s with "Slow" response) and can be switched to capture positive peak voltage, negative peak voltage or maximum voltage irrespective of polarity. A Peak Hold facility can be used to capture very short transient signals. The Peak Hold facility has a decay rate of 0,05 dB/s with the meter "Fast" response selected and 0,005 dB/s with "Slow" selected.

Calibrated Amplifier

The AC Output on the rear panel of the 2425 provides a line-level signal



for connection to other recording or signal processing equipment, with 1 V RMS at the output corresponding to full-scale meter deflection. The characteristics of the 2425's fixed gain amplifiers and attenuators ensure consistent phase response throughout the

range of the Voltmeter for accurate reproduction of the input signal. The 2425 has a frequency response which is linear to within $\pm 0,5$ dB from 0,5 Hz, "Slow" meter response; 20 Hz, "Fast" response, up to 0,5 MHz.

DC Output

A 7-pin DIN socket on the rear panel of the 2425 provides a DC output voltage which is proportional to the input signal. An output level of 1V is equivalent to full scale deflection on the meter; the output range is from +10dB to -30dB referenced to 1V. The output impedance of less than 10Ω allows the DC Output to be used

with chart recorders and other data recording equipment.

Meter Time Constants

The rear panel DIN socket also incorporates connections to the meter time constant circuit. By placing a resistor or capacitor between the Ext. Time Constant connector and Ground, the RMS averaging time and

the Peak decay time can be modified. For every 2,5μF of capacitance connected to the Ext. Time Constant connector, the RMS averaging time and the Peak decay time are increased by 10s. The Peak decay time can also be modified by adding a resistor to the Ext. Time Constant connector.

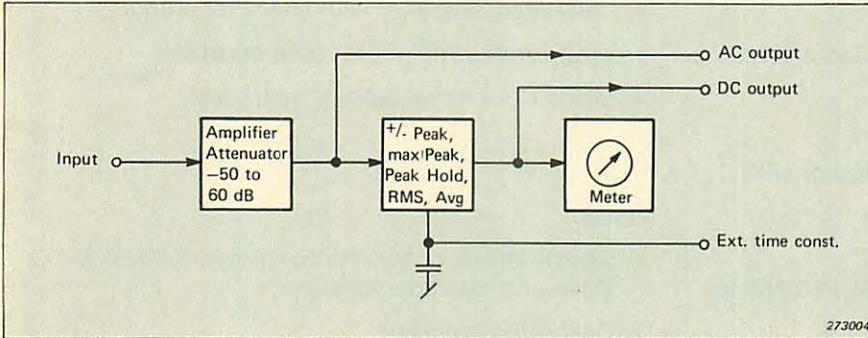


Fig. 1. Block diagram of the Type 2425 Electronic Voltmeter

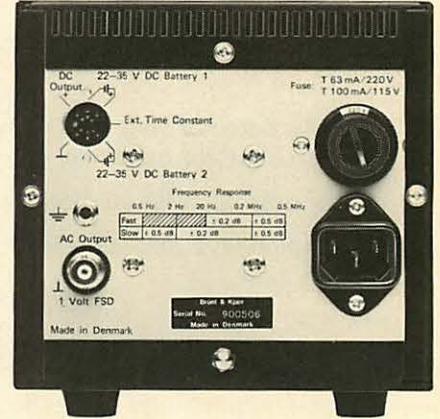


Fig. 2. Rear panel of the Type 2425

Specifications 2425

INPUT:

Standard BNC socket, mating plug JP 0035
Input Impedance: 1 MΩ // 47 pF
Max. Input Voltage: 250V DC; 110V peak in "mV" ranges, 600V peak in "V" ranges

Amplifier/Attenuator Range: -50 dB (300 V full-scale) to +60 dB (1 mV full-scale) in steps of 10 dB

Accuracy: better than 1%

Rectifier Dynamic Range: >40 dB

Accuracy: ± 0,5 dB, +10 dB to -20 dB
 ± 1 dB, -20 dB to -30 dB

FREQUENCY RESPONSE:

"Fast": ± 0,2 dB, 20 Hz to 0,2 MHz
 ± 0,5 dB, 0,2 MHz to 0,5 MHz

"Slow": ± 0,2 dB, 2 Hz to 0,2 MHz
 ± 0,5 dB, 0,5 Hz to 0,5 MHz

RMS MEASUREMENT:

Accuracy: ± 0,5 dB for signals with crest factor up to 5:1 (14 dB)

Averaging time: "Fast", approx. 270 ms;
 "Slow", approx. 3 s

External capacitor time constant: 10 s per 2,5 μF

AVERAGE MEASUREMENT:

"Fast" response for standard vu measurements, and "Slow" response

PEAK MEASUREMENT:

+ Peak, -Peak and Max. Peak measurement selected by front-panel switches

Input time constant: "Fast", 50 μs; "Slow", 500 μs

"Hold" leakage rate: "Fast", <0,05 dB/s;
 "Slow", <0,005 dB/s

"Reset" discharge time: "Fast", 2,7 s;
 "Slow", 30 s from full-scale deflection
 "Reset" can be activated by the front-panel switch or by a remote switch via the rear panel DIN socket

SIGNAL-TO-NOISE RATIO:

300 kHz bandwidth
1 mV Range: >40 dB
3 mV Range: >50 dB
Other Ranges: >60 dB

INHERENT NOISE: typically 31,6 μV with maximum amplification and input short-circuited

AC OUTPUT:

Standard BNC socket on rear panel; mating plug JP 0035

Output Voltage: 1 V RMS ± 2% at full-scale deflection

Max. Output: 5,6 V peak

Output Impedance: 100 Ω

Minimum Load: Resistance >10 kΩ; Capacitance <200 pF

DC OUTPUT:

Via 7-pin DIN socket on rear panel; mating plug JP 0703

Output Voltage: 1 V DC ± 2% at full-scale deflection

Max. Output: 5,6 V

Output Resistance: <10 Ω

Minimum Load: 1 kΩ

ENVIRONMENTAL LIMITS:

Temperature Range: +5°C to +40°C (41°F to 114°F)

Humidity: Up to 90% RH non-condensing at 30°C

External Magnetic Field: Up to 80 A/m at 50 Hz

MAINS POWER SUPPLY:

100; 115; 127; 200; 220; 240 V AC, 50-60 Hz, 9 VA

Complies with Safety Class I of IEC Publication 348

BATTERY POWER SUPPLY:

External battery connections to rear panel DIN socket; requires 2 batteries, 22V to 35V each

DIMENSIONS:

Metal cabinet, excluding connectors and feet

Height: 133 mm (5,2 ins)

Width: 140 mm (5,5 ins)

Depth: 200 mm (7,9 ins)

WEIGHT:

2,1 kg (4,63 lb)

ACCESSORIES INCLUDED:

Mains Cable..... AN 0010
 BNC Plugs (2)..... JP 0035
 7-pin DIN plug..... JP 0703
 Fuses T100 mA (3)..... VF 0026
 Fuses T63 mA (2)..... VF 0047
 Scale Lamps (2)..... VS 1273

ACCESSORIES AVAILABLE:

Meter Scale, dBm..... SA 0163
 Meter Scale, vu..... SA 0168
 BNC-BNC Cables..... AO 0087, AO 0135