

INSTRUMENT HANDBOOK

MODEL bwd 506 OSCILLOSCOPE

1. GENERAL:

Model bwd 506 embodies some unique features together with an excellent all round performance that makes it an outstanding instrument.

The 100% silicon solid state design is extremely stable in operation, amplifier and time base are compensated against input line voltage changes both for sensitivity and positional movement. Input FET amplifiers are protected against both + and - input over-voltage conditions up to 400V peak.

Its isolated ground enables 'incircuit' measurement to be made up to 400V from ground, it also eliminates ground loops and noise from low level measurements.

An active T.V. sync circuit provides line or frame lock which permits viewing of individual frame pulses, colour burst or equilising pulses.

For additional versatility the sync separator also provides an HF reject trigger selection and a demodulated trigger waveform for stable viewing of A.M. or single sideband R.F. displays.

Application notes are contained in Section 4 of this handbook.

Model bwd 506 has been designed for reliable long-term use - it has been subjected to environmental tests and each instrument is heat soaked and vibrated as part of its alignment procedure.

For maximum reliability it is advisable to replace the power supply protection fuse every 2000 hours of operation to guard against thermal stress failure. Additionally, if the instrument is to be left non-operating for long periods and is stored in a dusty atmosphere, it is wise to drop a plastic protection cover over it to minimise dust ingress into switch wafers, etc. A storage cover and a carrying case are available from B.W.D. Electronics Pty. Ltd., together with a full range of accessories (see catalogue).

2. SPECIFICATION

2.1	<u>C.R.T.</u>	<u>Type</u>	5" Diameter Type D13-27GH incorporating a spiral PDA & DC coupled Beam blanking.
		<u>Phosphor</u>	P31 normally supplied. P7 available as Option 04.
		<u>EHT</u>	3.0kV.
		<u>Graticule</u>	8 x 10 cm. graticule with .2mm subdivisions on major axis and detachable green light filter.
		<u>Deflection</u>	8 cm. vertically x 10 cm. horizontally.

2. SPECIFICATION (Cont'd)

2.2 VERTICAL AMPLIFIER

<u>Sensitivity</u>	5mV to 20V per cm. in 12 direct reading steps in a 1, 2, 5, 10 sequence.
<u>Bandwidth</u>	DC or 2Hz (AC coupled) to 15MHz - 3db., referred to 4cm. at 50kHz.
<u>Rise Time</u>	23nSec for 4cm. deflection.
<u>Input Impedance</u>	1m Ω and 35pf constant.
<u>Calibration</u>	<5% including 10% line change.
<u>Deflection</u>	8cm. CRT. 15cm. amplifier up to 1MHz.
<u>Input Voltage Protection</u>	$\pm 400V$ (DC + peak AC.)

2.3 TIME BASE

<u>Range</u>	200nSec to 2Sec/cm. in 22 switched ranges with 5-1 vernier extending range down to 10Sec/cm.
<u>Magnification</u>	X1 to X5 continuously variable, calibrated both settings. Max. sweep speed $\approx 40nSec/cm.$ mag. sweep.

2.4 TRIGGERING

<u>Selection</u>	<u>Coupling</u>	<u>Slope</u>	<u>Source</u>	<u>Mode</u>
	Norm.	+	Int.	AUTO
	T.V.	-	Ext.	Select Level
<u>Sensitivity</u>	Int. AUTO	0.5cm. defl. 1cm. defl. 3cm. defl.	10Hz to 5MHz 8Hz to 10MHz 1Hz to 15MHz	
	Int. Select	$\pm 4cm.$ max.	1Hz to 15MHz	
	Ext. AUTO	1V RMS	1Hz to 15MHz	
	Ext. Select	>1V RMS	1Hz to 15MHz	
	Max. Ext Input 100V p-p			
<u>T.V. Sync</u>	Triggers on Line in AUTO position. Triggers on Frame with Select Level fully clockwise.			
<u>Sensitivity</u>	2cm. to over 8cm. composite video waveform. Displays frame pulses, equalising pulses, colour burst, etc.			
<u>Demodulation or HF Reject.</u>	T.V. Selection also provides stable locking of modulated RF Waveforms and eliminates HF noise from trigger signals below 2kHz approx.			

2.5 HORIZONTAL AMPLIFIER

<u>Sensitivity</u>	Approx. 0.75V to >5V/cm. continuously variable.
<u>Bandwidth</u>	DC to 1MHz - 3db.

2. SPECIFICATION (Cont'd)

2.5 HORIZONTAL AMPLIFIER (Cont'd)

Input Impedance 56K Ω and 10pf approx.

Max. Input $\pm 100V$ or 60V RMS AMPLIFIER PHASE SHIFT Less than
1° from DC to >100kHz.

2.6 Z MODULATION

Input to CRT grid. 0.01 μ F + 560K Ω . -20V required blank CRT at normal intensity.

Option 25 - High Sensitivity DC Coupled Z Modulation provides +1V turn off sensitivity. Input DC coupled 500nSec Rise Time.

Calibrator Line Frequency 1V p-p square wave 2% accuracy.

Time Base Output 0 to 25V positive going sawtooth max. load 22K Ω .

Power Requirements 30 watts approx. 85V - 135V in 3 ranges } 50 - 60Hz.
190V - 265V in 3 ranges }

Dimensions 9.1/4" high x 7.1/2" wide x 16.1/2" deep overall feet, handle, knobs, etc.

Weight 16 lb. (7kg). Domestic / Air Freight Pack: 17.3/4 lb. (8 kg.)
Export Pack: 22 lb. (10kg).

Optional Accessories

Probes X1	P30
X10	P23
X1 & X10 Kit	P22
X1, X10 & Demod.	P29
Demodulator	P35
Carrying Case	C52
Vinyl Dust Cover	C12
Light Shield	H44
19" x 8.3/4" Rack Mount	
Adaptor	R77

NOTE: Characteristics expressed in numerical values with tolerances stated are guaranteed by the factory. Numerical values without tolerances represent the values of an average instrument. All data applies in case of nominal mains voltage unless otherwise stated.

3. FUNCTION OF CONTROLS

3.1 Front panel controls are grouped for ease of use and are clearly designated. The functions of these controls are as described below:

Intensity Control Fully anti-clockwise, this control switches the instrument OFF. When rotated clockwise the instrument is switched ON and further rotation controls the trace intensity (brightness) from zero to max.