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USER MANUAL

AT 7328/7425/7340

OSCILLOSCOPE

Instruction Manual for Dual Channel Oscilloscope

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GENERAL

1. AT7328/7425/7340 Series Dual Channel Oscilloscope

Maximum sensibility 5mV/div, maximum sweep speed 0.2 μ s/div, and can be expanded ten times to 20ns/div. This item apply 6in with red graticule rectangular CRT, with stable and reliable performance.

2. Feature

- CRT with Bright and high accelerated pole voltage
This oscilloscope tube is of fast speed and high light. Voltage of accelerated pole up to 2kV, able to indicate clear traces even under high-speed sweep.
- Two waveforms in different frequency can be observed via alternative trigger function.
- TV signal synchronous function
- **Ch1 output**
50 Ω output signal of real panel can directly drive frequency counter or other instrument.
- **Z-axis input**
Function of bright adjustable can add frequency or time marker to oscilloscope, trace of positive signal blanking, TTL matching.
- **X-Y operation**
This item can be used as an X-Y oscilloscope while setting in X-Y position, CH1 is horizontal axial and CH2 is vertical axial.

TECHNICAL SPECIFICATIONS (Part 1)

SPECIFICATIONS		MODEL		Data20MHz	Data25MHz	Data40MHz
				AT7328	AT7425	AT7340
Vertical System	Sensitivity	5mV~5V/div,10 steps in 1-2-5 sequence				
	Sensitivity Accuracy	$\leq 3\%$ (<i>x5 MAG: $\leq 5\%$</i>)				
	Vernier vertical Sensitivity	To 1/2.5 or less of panel-indicated value				
	Frequency Bandwidth	DC~20MHz (<i>x5 MAG: DC~7MHz</i>)	DC~25MHz (<i>x5 MAG: DC~7MHz</i>)	DC~40MHz (<i>x5 MAG: DC~15MHz</i>)		
		AC Coupling: <10Hz				
	Rise Time	Approx: 17.5nS (<i>x5 MAG: 50nS</i>)	Approx: 17.5nS (<i>x5 MAG: 50nS</i>)	Approx: 9.5nS (<i>x5 MAG: 25nS</i>)		
	Input Impedance	Approx: 1M Ω /25pF				
	Square wave characteristics	Overshoot: $\leq 5\%$ (<i>At 10mV/DIV range</i>) Other distortions and other ranges: 5% added to the above value.				
	DC Balance Shift	5mV~5V/DIV: ± 0.5 DIV, 1mV~2mV/DIV ± 2.0 DIV				
	Linearity	< ± 0.1 DIV of amplitude change when waveform of 2 DIV at graticule center is moved vertically.				
	Vertical system	Ch1: Channel 1 Ch2: Channel 2 DUAL: Channel 1 and Channel 2 ADD: Addition of Channel 1 and Channel 2				
	Chopping repetition Frequency	Approx.250KHz				
	Input Coupling	AC, GND, DC				
	Max Input Voltage	300Vp-p				
CMRR	> 50:1 (<i>@50KHz sine wave</i>)					
Isolation between channels (<i>At 5mV/DIV range</i>)	> 1000: 1 at 50KHz		> 30: 1 at 20MHz		> 30: 1 at 40MHz	

TECHNICAL SPECIFICATIONS (Part 1 continue.)

Vertical System	CH1 Signal Output	Min.20mV/DC (50Ω output bandwidth 50Hz~5MHz)		
	CH2 INV BAL	Balance variance ratio ≤ 1 DIV		
Triggering	Triggering Source	Ch1, Ch2, LINE, EXT		
	Coupling	AC: 2MHz~20MHz: 1.5DIV	AC: 2MHz~25MHz: 1.5DIV	AC: 20MHz~40MHz: 1.5DIV
	Slope	+/-		
Horizontal System	Trigger signal Input Impedance Max Input Voltage	Approx 1MΩ/25Pf 300V (DC+AC peak) AC not exceed 1KHz		
	Sweep time	0.2μSec/0.5Sec/DIV, 20 steps in 1-2-5 sequence		
	Sweep time Accuracy	± 3%		
	vernier sweep time control	≤ 1/2.5 of panel-indicated value		
	Sweep magnification	10 times		
	× 10MAG Sweep time accuracy	± 5% (20nSec~50nSec are uncalibrated)		
	Linearity	± 3%, × 10MAG: ± 5% (20ns and 50ns are uncalibrated)		
	Position by × 10MAG	Within 2DIV.at CRT screen center		
X-Y Mode	Sensibility	Same as Vertical axis		
	Bandwidth	DC-500KHz		
	X-Y Phase difference	=3 (within DC50KHz)		
Z Axis	Sensibility	5Vp-p		
	Bandwidth	DC-2MHz		
	Input impedance	Apporx.47KΩ		
	Max input voltage	30V		
Calibration Signal	Waveform	Square wave		
	Frequency	Approx 1Kz		
	Duty Ratio	< 48:52		
	Output voltage	2Vp-p ± 2%		
	Output impedance	Approx 1KΩ		

TECHNICAL SPECIFICATIONS (Part 1 continue.)

CRT	Type	6 in, Rectangle, Inside graduation
	Phosphor	P31
	Acceleration Voltage	Approx 2kV 200MHz
	Effective Screen Size	8×10DIV(1 DIV=10mm(0.39in))
	Graticule	Internal
	Trace rotation	provided

Power requirement:

- **Voltage:** Fixed AC220V ± 10% or 110/220V ± 10% selectable
- **Frequency:** 50/60Hz
- **Power consumption:** Approx.40VA, 35W(max.)

Operating Ambient:

- Indoor, 2000m elevation
- **Ambient temperature:** 10°C ~ 35°C
- **Max operating range:** 0°C ~ 40°C
- **Humidity:** 85% RH, dry
- **Size:** 310 × 150 × 455(mm)
- **Weight:** approx. 8kg
- **Storage temperature:** -10°C ~ 70°C

Accessories:

- Power cord: × 1
- Instruction manual: × 1
- Probs: × 2

PRECAUTIONS

1. Unpacking

Strict inspection and test are done before leaving factory, open the package at once as this item is received to check whether there is any spoilage during transportation, if yes, contact supplier or sender immediately.

2. Check power voltage

AC 110V/220V are available, check the voltage switch whether conform with the local supply or not before switch on.

Notice: Failure in select power will result in damage the oscilloscope.

 **Warning:** To avoid electric shock, do connect protect terminal to ground reliably.

Replace the fuse refer to the following form if the fuse is burnt out. (Part 2)

Voltage	Range	Fuse
AC220V	198 ~242V	T 0.5A/250V
AC110V	109 ~121V	T 1.0A/250V

 **Warning:** For protection, cut off power before replacing the fuse.

3. Environment

Ambient temperature of operation between 0-40°C is recommended.

4. Installation and Operation

Make sure there is no other article in the sink hole of oscilloscope.

5. CRT Intensity

To prevent permanent damage to the CRT phosphor, do not make the CRT trace excessively bright or leak the spot stationary for an unreasonably long time.

PRECAUTIONS

6. Maximum voltage of Input

Maximum voltage of Input Do not exceed the limitation refer to the following form. The effective readout voltage is 40V_{p-p} (14V_{rms} in sine wave) for setting the probe in 1:1. The max effective readout is 400V_{pp} (140V_{rms} in sine wave) for setting the probe in 10:1. (Part 3)

Input Max	Input voltage
Ch1, CH2	300V peak
External trigger input (EXT TRIG IN)	300V peak
Probe	600V peak
Z-axial	30V peak

 **CAUTION:** To avoid damage, do not exceed these values. Frequency of Max input voltage must be lower than 1kHz.

If an AC volt overlap on DC volt, the maximum voltage of CH1 and CH2 input cannot exceed 300V, therefore, for a AC which average voltage is zero, its peak-peak value is 600V_{pp}.

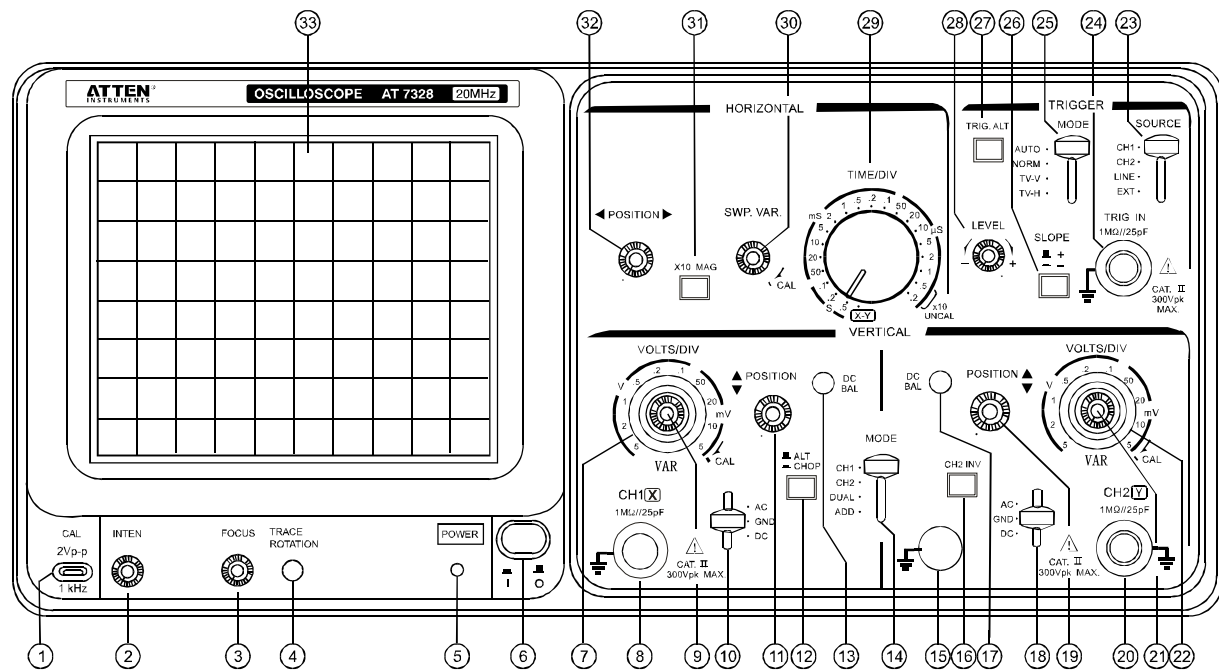
OPERATION METHODS

1. Features of front panel

- **CRT:** 6) **Power:** Main power switch, LED 5) lights when this switch is ON
- 2) **Intensity:** Adjust intensity of trace or spot
- 3) **Focus:** Adjust focus of trace or spot
- 4) **Trace Rotation:** Adjust the parallel of horizontal trace and scale line via a semi-fix potentiometer
- 33) **Color filter:** For the waveform looks more clearly

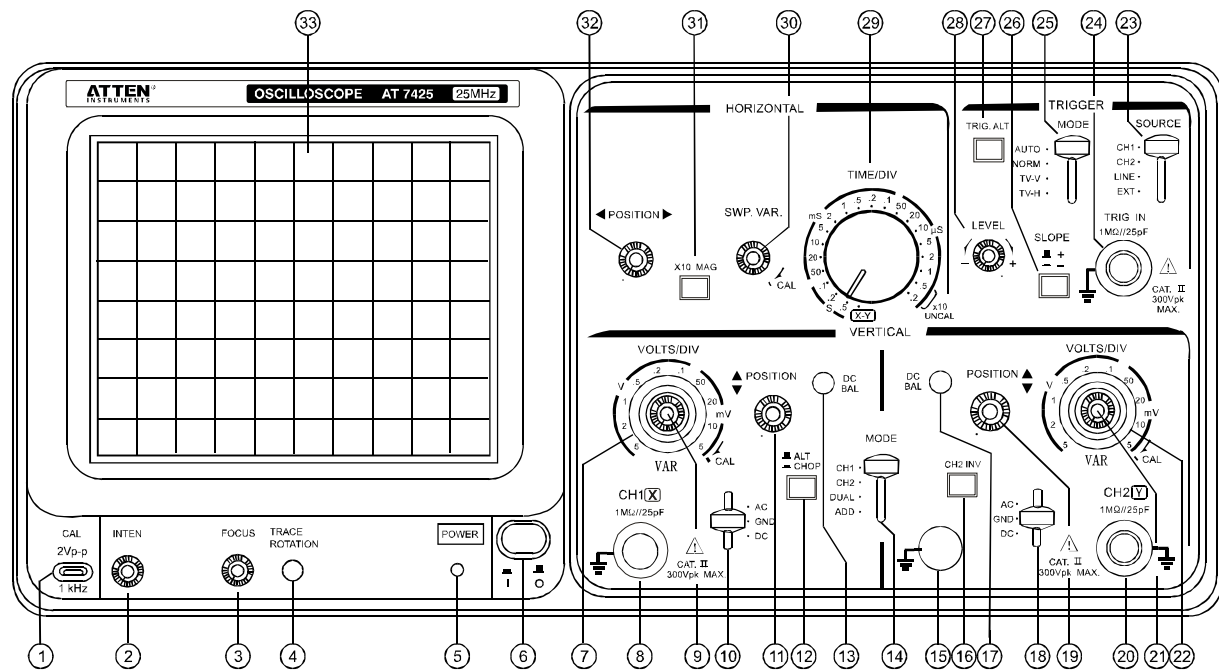
OPERATION METHODS

- **Vertical axis:** 8) **CH1(X) Input:** as input of X-axis for X-Y mode
20) **CH2 (Y) Input:** as input of Y-axis for X-Y mode
- **Model: AT7328** (Figure 1)



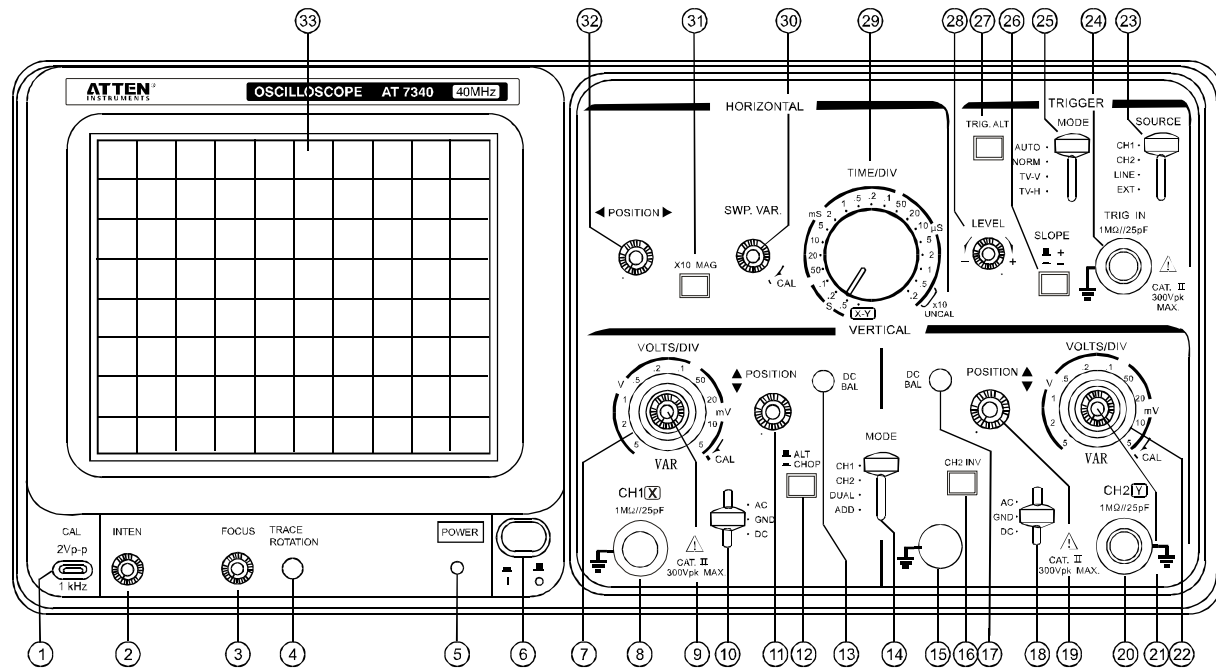
OPERATION METHODS

- **Model: AT7425** (Figure 2)



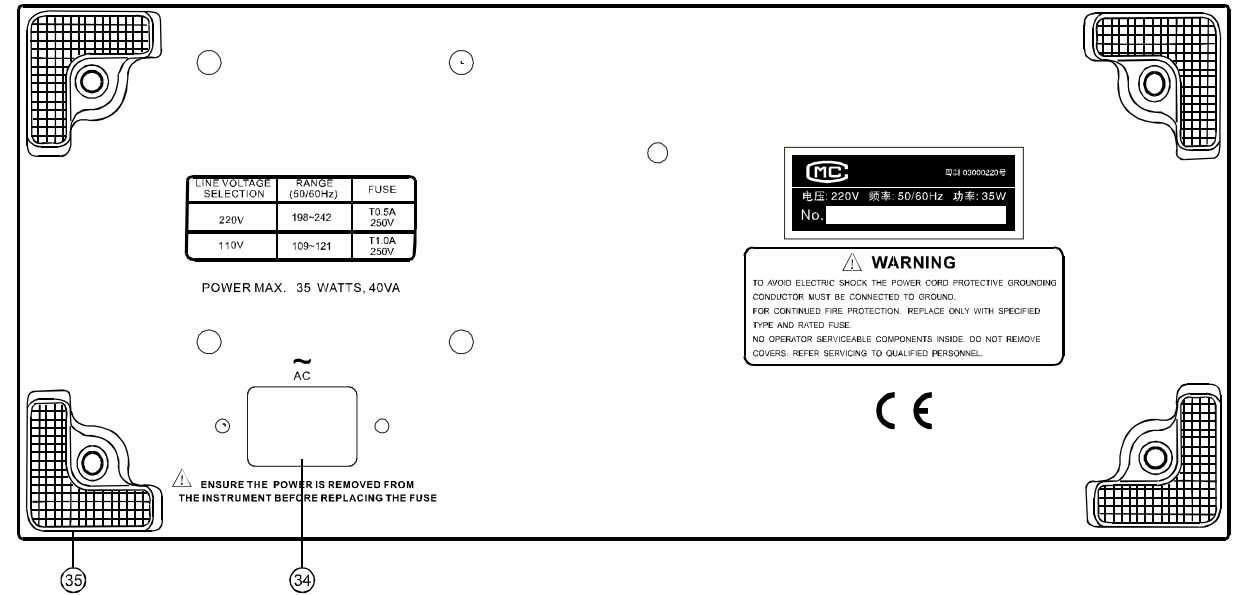
OPERATION METHODS

● Model: AT7340 (Figure 3)



OPERATION METHODS

● Model: AT7328/AT7425/AT7340 (Figure 4)



OPERATION METHODS

- 10) 18) AC-GND-DC: Choose input mode of input signal of vertical axial.
AC: AC coupling. GND: input grounding of vertical amplifier, input switch off. DC: DC coupling.
- 7) 22) VOLTS/DIV: adjust vertical reflection sensibility vary from 5mV/div—5V/div, in 10 steps.
- 9) 21) VARIABLE: fine-tune sensibility not less than 1/2.5 of nominal, sensibility just is nominal when in calibration position.
- 13) 17) DC BAL of CH1 and CH2: used to balance testing for attenuator.
- 11) 19) ▼▲ Position: adjust vertical position of trace in screen.
- 14) Vertical mode: operation modes of CH1 and CH2 amplifier
CH1 or CH2: display of CH1 or CH2 individually DUAL: both channels display simultaneously
ADD: display of the algebraic sum of both channels ($CH1+CH2$). Algebraic difference ($CH1-CH2$) for Ch2 INV 16) pressed.
- 12) ALT/CHOP: release the button when in dual channel display, indicates alternative display of CH1 and CH2 (*usually for the faster sweep speed condition*); Chop display simultaneously of CH1 and CH2 when pressed the button (*usually for the slower sweep speed condition*).
- 16) CH2 INV: signal invert of CH2, both signal and trigger signal of CH2 invert simultaneously.
- **Triggering:**

24) External trigger input: used for triggering for external signal. For this case, Switch 23) should be set in EXT.

23) Selection of trigger source: trigger of internal (*INT*) or external (*EXT*).
CH1: Choose CH1 as internal trigger signal source, for vertical mode switch 14) is set in DUAL or ADD.
CH2: Choose CH2 as internal trigger signal source, for vertical mode switch 14) is set in DUAL or ADD.

27) TRIG. ALT: Alternatively choose CH1 and CH2 as internal trigger signal source by pressing 27), for vertical mode switch 14) is set in DUAL or ADD, and trigger source switch is set in CH1 or CH2.
LINE: Choose AC power source as trigger signal.
EXT: External trigger signal connect 24) as trigger signal source.

26) Slope: Choose polarity of trigger signal. “+” for rising edge trigger, and “-” for falling edge trigger.

28) Level: Display a synchronous stable waveform, and setting a starting point of a waveform. Trigger Level Up shifting by turning toward “+”, and trigger level downward shifting by turning toward “-”.

OPERATION METHODS

- 40) LOCK: click (28) by fully clockwise position, then triggering level is automatically maintained at optimum value irrespective of the signal amplitude, requiring no manual adjustment of triggering level.
- 25) Trigger modes: choose trigger modes.
AUTO: Automatic/ Sweeping in free mode when no trigger signal input.
NORM: Normal/ Trace in standby state and without display when no trigger signal input.
TV-V: TV-Vertical/ Observing the entire vertical picture of TV signals.
TV-H: TV-Horizontal/ Observing the entire horizontal picture of TV signals.
(*Synchronizing TV-Vertical and TV-Horizontal only in the case of synchronous signals are negative pulses*)
- **Timebase**

29) TIME/DIV: Sweep speed is divided into 20 steps, from 0.2 μ S/div to 0.5S/div. And set X-Y position can use as X-Y oscilloscope.

30) SWP.VAR: Fine tuning the time of horizontal sweep, in order to calibrate the sweep time in accordance with TIME/DIV on panel.

32) ◀▶ POSITION: Adjust the horizontal position of trace on screen.

31) ×10MAG: Sweep speed will be magnified 10 times by pressing it.
 - **Others:**

1) CAL: This terminal delivers the calibration voltage of 2Vp-p, approx 1kHz, positive square wave.

15) GND: Grounding terminal of oscilloscope case.

39) FREQUENCY METER: Display a synchronized signal frequency.
- ### 2. Introduction of Rear Panel (figure 4)
- 34) Z-axis input: signal input of external intensive adjusting.
- 35) CH1 signal output: provide CH1 signal (*about 20mV/div*) to terminal of 50 Ω , connect frequency counter or other equipment is available.
- 36) AC Power: AC Power input.
- 37) Fuse: The specification of fuse refer to Form 2.
- 38) Studs: for supporting the oscilloscope and lead out the power cord.
- 41) Line voltage selector: 110V/220V power input for choose.

OPERATION METHODS

3. Basic operation: Single channel operation

Make sure whether the voltage of the unit is in accordance with your local voltage before switch on, then adjust the relative control components according to the following form: (Part 4)

Functions	Number	Setting
POWER	6)	OFF
INTEN	2)	Centralize
FOCUS	3)	Centralize
VERT MODE	14)	CH1
ALT/CHOP	12)	Released(ALT)
CH2 INV	16)	Released
▼▲ POSITION	11) 19)	Centralize
VOLTS/DIV	7) 22)	0.5V/DIV
VARIABLE	9) 21)	CAL(Calibration position)
AC-GND-DC	10) 18)	GND
Source	26)	+
TRIG.ALT	27)	Released
TRIGGER MODE	25)	Automatic
TIME/DIV	29)	0.5mSec/DIV
SWP.VER	30)	Calibration position
◀▶ POSITION	32)	Centralize
X10 MAG	31)	Released

OPERATION METHODS

After setting the switch and control part, connect power cord, and then continue as follows:

- Switch on, power indicator on, traces appear on screen in about 20s. If no traces appear in 60s, check the settings of switches and control knobs.
- Adjust intensive and focus respectively, make the traces clear.
- Adjust Ch1 position knob and trace turning potentiometer to parallel the trace and horizontal scale (use screw driver to adjust trace turning potentiometer 4).
- Input the calibrated signal to CH1 input port by using 10:1 probe.
- Set the switch AC-GND-DC in AC state. A waveform as fig.3 will appear on screen.
- Adjust focus to achieve clearest figure.
- Regard to other signals, by adjust vertical attenuation switch and sweep time to desired position, and achieve clear figure.
- Adjust vertical and horizontal position knob, in order to read out the amplitude and time of waveform easily.

* The above are the foundational operations of oscilloscope, the operation of CH2 and CH1 are the same.

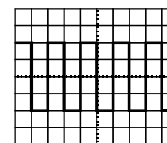


Figure 3

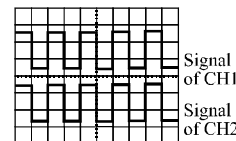


Figure 4

4. Operation of dual channel

Adjust Vertical mode to DUAL, and trace of Ch2 will appear on screen (the same with CH1). At this time, a square wave displays on CH1 (come from output waveform of calibration signal), and only one straight line displays on CH2, since no signal through this channel. Now put the calibration signal to CH2 input, which is the same with CH1, set AC-GND-DC switch to AC, adjust vertical position 11) and 19) to make both channels as fig.4. Release ALT/CHOP switch, (set in ALT). The signals of CH1 and CH2 display on screen alternatively, this setting is used for scanning the two signals of shorter sweep time. Press ALT/CHOP switch, (set in CHOP). Signals of CH1 and CH2 display on screen separately with the rate of 250kHz, this setting is used for scanning the two signals of longer sweep time. When in the operation of dual channel, (DUAL or +/-), must select the signal of CH1 or CH2 by triggering switch of signal generator, which act as trigger signal. If the signal of CH1 and CH2 synchronize, the both waveform stably display. In reverse, only the signal of trigger signal generator can stably display; if TRIG/ALT switch depressed, both the waveforms stably display.

5. +/- Operation

By adjusting the setting of "vertical modes switch" to "add", the algebraic sum of CH1 and CH2 will be displayed, or algebraic difference if the switch CH2 INV is depressed. For gain the accurate values of both, the attenuation setting of the both channels must be consistent. Vertical position can be adjusted by "▲▼ Position". In consideration of the linear change of vertical amplifier, setting the knob in central position is recommended.

OPERATION METHODS

6. Selection of trigger source

Properly selecting trigger source is crucial to effectively use the oscilloscope. User should acquaint the selection function and operation sequence of trigger source.

● MODE switch

AUTO: In mode of Auto, sweep generator free generator a sweep signal without trigger signal; It turn to trigger sweep when there is trigger signal. Usually observe a waveform at first time, set in "AUTO", and after a stable waveform is observed, adjust other setting. Having set other control parts, switch should be set to "NORM" trigger mode, as this mode more sensible. It should use "AUTO" mode when test DC signal or small signal.

NORM: Normal mode, sweeper often keep in stationary state, no trace display on screen. When trigger signal through the valve level, which is set by: "Trigger level switch", scan one time. Then the sweeper turn back to stationary state till to be triggered next time. When dual channel display "ALT" & "NORM" sweep, it doesn't display unless CH1 and CH2 have sufficient trigger level.

TV-V: Setting the MODE switch to the TV-V position permits selection of vertical sync pulses for sweep triggering when viewing composite video waveforms. Vertical sync pulses are selected as trigger to permit viewing of vertical fields and frames of video. A sweep time of 2ms /DIV is appropriate for viewing fields of video and 5μs/DIV for complete frames (two interlaced fields) of video.

TV-H: Setting the MODE switch to the TV-H position permits selection of horizontal sync pulses for sweep triggering when viewing composite video waveforms. Vertical sync pulses are selected as trigger to permit viewing of vertical fields and frames of video. A sweep time of 10ms /DIV is appropriate for viewing lines of video. The SWR VAR control can be set to display the exact number of waveforms desired This oscilloscope synchronizes with only (-).slope, that is the sync pulse are negative and video is positive as shown in Figure 5.

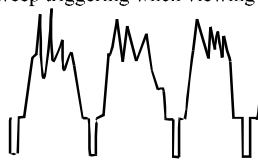


Figure 5

● Function of trigger source:

In order to display a stable waveform on screen, a signal which is relate with display signal in time should be provided to trigger circuit, the trigger switch is just used to select the trigger signal.

CH1/CH2: Internal trigger mode in most cases. The signal which is sent to vertical input, separate one part to trigger circuit before pre-amplify. As the trigger signal is just the signal under tested, a stable waveform will display on screen. In DUAL or ADD mode, trigger signal is selected by trigger source switch.

LINE: Use frequency of AC supply as trigger signal. This method is very available to test the signal relate with power frequency. Such as AC noise of acoustic equipment, thyristor circuit etc.

EXT: Drive scan trigger circuit by external signal. Since the external signal has certain time relate with the signal under tested, the

OPERATION METHODS

Waveform can be display more independently.

● Trigger level and slope switch

It generates a sweep trigger signal when trigger signal through a preset valve level. The level can be changed by selecting trigger level, valve level move to positive when adjust toward "+". And valve level move to negative when adjust toward "-", and valve level set in average of signal when in centre. About positive signal, starting phase is variable. **Note: if the trigger level is adjusted over-positive or over-negative, there is also no sweep signal generates, because by now the trigger level has been exceed the amplitude of synch ronized signal.** When the slope trigger switch set in "+", rising edger triggered, and falling edge is triggered for "-". (figure 6)

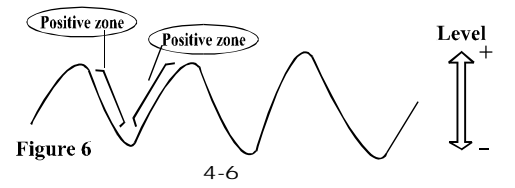


Figure 6

● Trigger alternative switch

When vertical mode set in dual channel display, the switch used in alternative trigger and alternative display (suitable for the mode of summarize with CH1, CH2). In alternative mode, trigger signal alternates one time for every sweep period. This mode is avail for the test of waveform amplitude and period, even the two waveform has no relative can be observed, but not suitable for measuring of phase versus time. About this measurement, both channels must be trigger by the source synchronize signal. In dual channel display, if "CHOP" : & "TRIG.ALT" depressed simultaneously, cannot synchronize display, due to "CHOP" signal become trigger signal. Recommend to use "ALT" mode or directly select CH1 or CH2 as trigger signal source.

7. Time/ DIV control

Adjust sweep rate knob, select the waveform number that you want to observe. If too many waveform display on screen, adjust sweep time faster, if only one period waveform display on screen, can slow down the sweep time. When the sweep rate is too fast, only a part of period signal can be observed. But there may be only one straight line on screen for a square signal.

8. Sweep Magnification

Extreme high sweep rate is required when observe a part of a waveform. But if the part want to be observed is far from starting point of sweep, the observed waveform may be out of screen. Now the sweep extension switch is (the value o "weep rate switch") multiple by 1/10. eg, 1μSec/div can be extended to 100nSec/div.

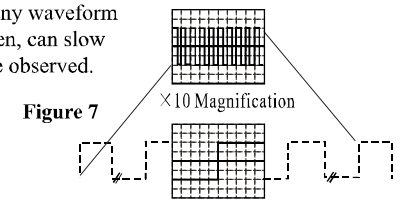


Figure 7

View waveform of the whole zone by adjusting ► position knob

OPERATION METHODS

9. X-Y operation

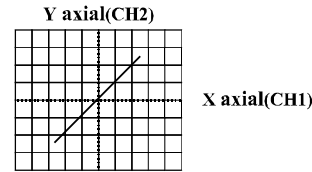
Set the sweep rate switch in X-Y position, the mode of oscilloscope is X-Y.

X-axial: CH1 input Y-axial: CH2 input

Note: when HF signal in X-Y mode, should notice the difference of frequency and phase of X and Y axial.

X-Y mode allows the oscilloscope perform many tests that normal oscilloscope unavailable to. CRT can display an electronic image or two instant levels. It can be the directly comparison of the both levels, just as the vector oscilloscope display visual colorful images. If some relative parameters (frequency, temperature, rate etc.) are converted to voltage by using a sensor, X-Y mode can display almost any of the dynamic parameter images. Test of frequency response is a common example. Y-axial represents signal amplitude, X-axial represents frequency. (See fig 8)

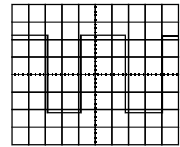
Fig 8



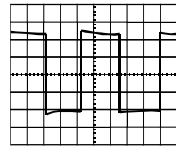
10. Probe calibration

As concern above, oscilloscope probe can use for a very wide frequency range, but phase compensation is must. Distort waveform may cause measurement error. Therefore, it should proceed probe calibration before measurement. Connect 10:1 probe to the input of CH1 or CH2, set the attenuation switch to 50mV, connect the probe needle to the input of calibration signal, adjust compensation capacitor to the best waveform (no overshoot, fillet, upwarping). (See fig 9)

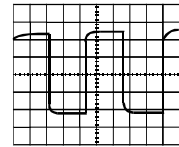
Fig 9



(A) Appropriate compensation



(B) Overcompensation



(C) Undercompensation

11. DC balance adjustment (DC BAL)

- Set the input coupling switch of CH1 and CH2 in GND, trigger mode in AUTO, adjust trace in centre position.
- Adjust the attenuation switch between 5mV and 10mV, tune DC BAL until the trace is below zero horizontal line and keep stationary.

MAINTENANCE



Warning: No operator serviceable component inside, do not remove covers, refer servicing to qualified personnel only.

1. Replacement of fuse

If the fuse is burnout, power indicator will go out, and the oscilloscope will failure to work. Usually the fuse is not open circuit, unless the circuit has problem. Check the circuit problem at first, which may cause the fuse breakout, then replace the fuse. Use the specification with the original fuse. The fuse is on the rear panel, see fig 4-2.



Warning: To avoid fire, use the fuse with 250V voltage and pertinent current only. Disconnect the power cord before replacement.

2. Clean

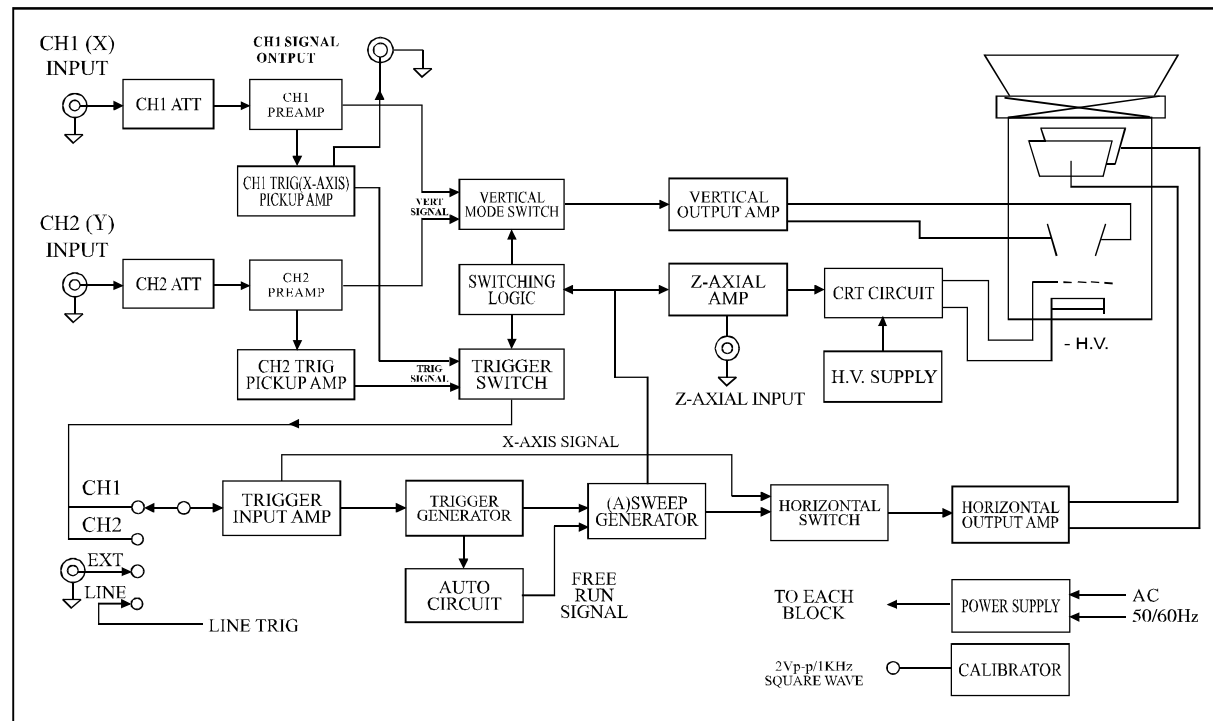
Clean oscilloscope by using a soft cloth, which has been dipped neutral detergent and water. Do not pray the detergent on to the oscilloscope surface directly, since it may cause the inside parts damaged.

Do not use the chemicals with gasoline, benzene, toluene, xylene, acetone or other similar solvents.

Do not use abrasive powder or similar detergent to clean the oscilloscope.

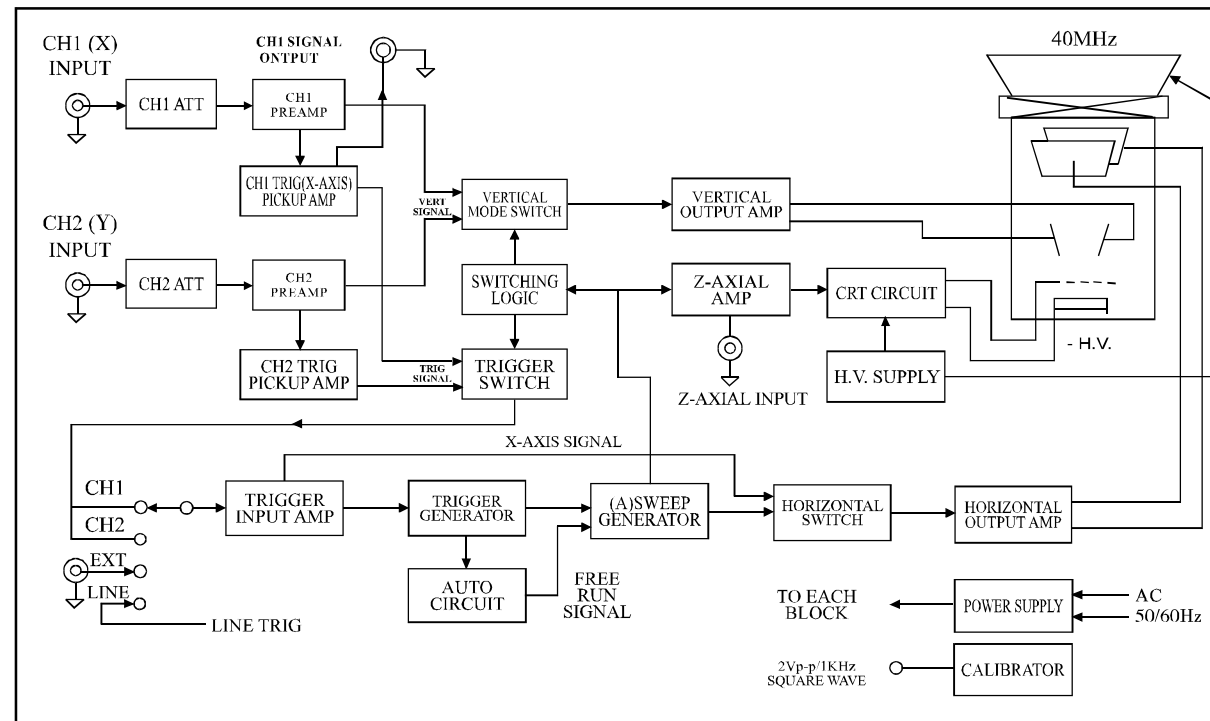
BLOCK DIAGRAM

● Model: AT7328/7425 (Figure 4)



BLOCK DIAGRAM

● Model: At7340 (Figure 5)



1. Spectrum Analyzer

Frequency Expander

2. Spectrum Analyzer

3. EMC Pre-Authentication Measurement

- Electric Network Conduction, Radiated Interference Test Interface.
- Spectrum Analyzer Probe

4. Signal Generator

5. Frequency Counter

6. RF & Microwave Transmission Measurement Components (Coaxial Waveguide Components)

- SWR Reflect Measurement Bridge and Terminal Load
- **Amplifier**
 - (1) AT2000 RF Amplifier
 - (2) Wideband LNA
 - (3) Microwave RF Amplifier
- **Attenuator**
 - (1) High Power Coaxial Fixed Attenuator
 - (2) Coaxial Directional Coupler
- Coaxial Load
- Impedance Transformer
- Coaxial Directional Coupler
- Detector
- Power Divider
- Waveguide Components

7. Oscilloscope

8. Power Meter

9. Power Supply Meter

10. Advanced Millivolt Supply

11. Adjustable Regulated DC Power Supply

- **Adjustable Regulated DC Power Supply**
 - (1) AT-APS Series Maintenance Power Supply
 - (2) AT-APR Series CC, CV Pointer Power Supply
(Commercial Products)
 - (3) AT-TPR Series CC, CV Digital Display Power Supply
(Industrial Products)
 - (4) AT-E Series Low Ripple CV, CC Digital Display Power Supply
(Research, Education, Military Products)
 - (5) AT-SPS Series Compensation Linear Power Supply
 - (6) AT-KPS Series Switching Adjustable Power Supply
- **Adjustable High Power Switching Power Supply**
AT-QK Light Weight Series Switching Integrated Power Supply
(Corrosion Production, Waterproof, Salt-mist Production)
- **Others**
 - (1) AT-DC/DC Series DC Converter
 - (2) AT-TX Series Communication Special Power Supply
(DC 48V Input)
 - (3) AT-NB Series Inverter Power Supply

12 Advanced Rework Station

* All specifications are subject to change without previous notice.