30 MHz Oscilloscope with Color LCD Digital Readout, Component Tester, Digital Multimeter and Power Supply Techlab Scientech 820

Product Tutorial

Ver. 1.2

Designed & Manufactured in India by:
An ISO 9001:2008 company
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Safety Instructions

Read the following safety instructions carefully before operating the product.

To avoid any personal injury, or damage to the product, or any products connected to it;

Do not operate the instrument if you suspect any damage within.

The instrument should be serviced by qualified personnel only.

For your Safety:

Use proper Mains cord : Use only the mains cord designed for this product. Ensure that the mains cord is suitable for your country.

Ground the Instrument : This product is grounded through the protective earth conductor of the mains cord. To avoid electric shock the grounding conductor must be connected to the earth ground. Before making connections to the input terminals, ensure that the instrument is properly grounded.

Observe Terminal Ratings : To avoid fire or shock hazards, observe all ratings and marks on the instrument.

Use only the proper Fuse : Use the fuse type and rating specified for this product.

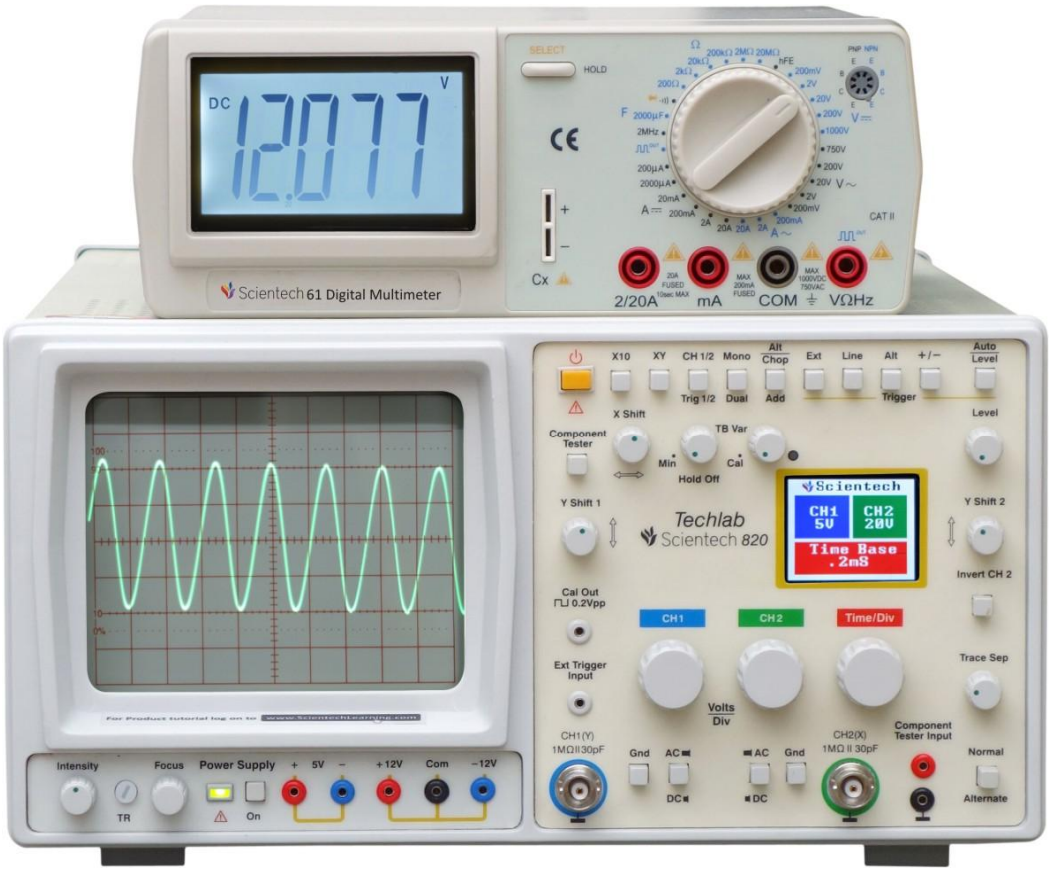
Use in proper Atmosphere : Please refer to operating conditions given in the manual.

1. **Do not operate in wet / damp conditions.**
2. **Do not operate in an explosive atmosphere.**
3. **Keep the product dust free, clean and dry.**

Techlab Scientech 820

Introduction

Techlab Scientech 820 is an ideal Instrument for Electronics, Electrical & Instrumentation Laboratories. This Techlab 820 has Oscilloscope, Digital Multimeter and DC Power Supply in a compact space saving housing. The Scientech 820 forms an Independent Test Lab for many applications.



Techlab Scientech 820

Features

- 2 Channel-4 Trace Display
- 40 MHz Trigger Bandwidth
- Scientech Digital Multimeter
- DC Power Supply ± 12 V & 5 V
- Component & Continuity Tester
- Microcontroller based design
- Alpha numeric LCD with backlit
- Alternate Triggering
- Variable Hold Off & Line Triggering
- Digital Readout with backlit Color LCD

Digital Multimeter

· Power supply : 230V/110V AC

· Manual range

· 4 ½-digit large LCD display with back light (displaying range : 75×40mm), max reading : 19999

· Voltage measurement up to 1000V DC and 750V AC.

· DC, AC current up to 20A

· ACV frequency response : 50KHz

· Frequency, resistance, capacitance measurement, triode, diode check and continuity test

· Overload protection; 250V rms.

Technical Specifications

Oscilloscope

Operating Modes:
Channel I, Channel II, Channel I & II alternate or chopped (approximately 350 KHz), X-Y operation (Ratio 1:1 Input via CH II), Add/ Sub CHI ± CH II, Invert CH II.

Vertical deflection (Y):

Identical channels

Bandwidth: DC-30 MHz (-3dB)

Rise Time: 12ns (approximately).

Deflection coefficients:

Micro-controller based 12 calibrated steps 5 mV/cm–20 V/cm (1-2-5 sequence). Electronic Control Display on Color LCD

Accuracy: ± 3%

Input Impedance:

1 MΩ || 30 pF (approximately)

Input: BNC Connector

Input coupling: DC-AC-GND

Maximum Input voltage: 400 V (DC + Peak AC).

Time Base:

Time coefficients: Micro-controller based 18 calibrated steps, 0.5 µs/cm - 0.2 s/cm (1-2-5 sequence). Electronic control display on Color LCD.

Accuracy: ± 3% (in cal position)

Magnifier: X10

Sawtooth: 5Vpp approximately
Highest TB speed: 20 ns

Hold-Off: Variable Control for Stable Triggering.

Trigger System:

Trigger Bandwidth: 40MHz

Modes: Auto / Level

Source: CH I, CH II, Alt-CH I&CH II, Ext.

Slope: Positive or Negative

Coupling: AC

Sensitivity: Internal 0.5div, External 0.8 V (approximately).

Horizontal Deflection (X): Input via CHII

Bandwidth: DC - 3 MHz (-3 dB).

X-Y mode: Phase Shift < 3° at 60 KHz.

Deflection coefficients: Micro-controller based 12 calibrated steps 5 mV/mc-20 V/cm (1-2-5 sequence). Electronic Control Display on Color LCD

Input Impedance: 1 MΩ || 30 pF (approximately)

Input: BNC connector

Input coupling: DC-AC-GND

Maximum Input voltage: 400V (DC + Peak AC)

Component Tester (Built in Single Touch)

Test Voltage: Maximum 8.6V_{rms} (Open circuited)

Test Current: Maximum 8mA_{rms} (Short circuited)

Test Frequency: 50 Hz, Test circuit grounded to chassis.

Continuity Tester:

Beeper sounds < 75 Ω (approximately).

DC Power Supply:

Fixed Output Voltage: 5V/ 500mA

± 12 V / 250mA

Techlab Scientech 820

General Information:

Cathode Ray Tube:

140 mm Rectangular tube with internal graticule. P31 Phosphor

Accelerating potential: 2 KV (approximately)

Display: 8 x 10 cm

Trace Rotation: Adjustable on front panel

Calibrator: Square Wave Generator 1 KHz (approximately), 0.2Vpp ± 1% for probe compensation.

Z Modulation: TTL level

Stabilized Power Supply: All operating voltages including the EHT

Mains Voltage: 230 V ± 10%; 50/60 Hz.

Power Consumption: 65 VA (approximately)

Color Display: LCD Type: 65K Color TFT, Negative Transmissive

Resolution: 128(W) ×128(H)

Viewing direction: 6 O' clock

Screen Size: 1.51”

Weight (approx): 9 Kg. (approximately)

Dimensions (mm): W325 x D370 x H215

Operating Temperature: 0-40°C; 80% RH

Scientech 61 Digital Multimeter Technical Specifications

Accuracy = ± (reading % the lowest effective digit) preheating time: 30min.

Temperature for accuracy guarantee: (32 ± 5) °C, R.H<75%, one year guaranteed from the production date

DC Voltage (DCV)

Range	Accuracy	Resolution
200Mv	± (0.5%RDG+3)	10uV
2V		100uV
20V		1mv
200V		10mV
1000V	±(0.1%RGD+5)	100mV

Input residence: 10MΩ for all ranges

Overload protection: 200mV range: 250V DC or AC peak value .other range: 1000VDC or AC peak value

AC Voltage (DCA)

Range	Input frequency	Accuracy	Resolution
200mV	50Hz-50 KHz	±(0.8%RGD+80)	10Uv
2V	50Hz-20KHz		100uV
20V			
200V	50Hz-5KHz		10mV
750V	50Hz-400Hz	±(1.0%RGD+50)	100mV

The input value for accuracy guarantee should be larger than 10% of range. Input resistance: 2M Ω for all range.

Overload protection: 200mV range: 250V DC or AC peak value, other range: 1000V DC or AC peak value.

DC Current (DC) :

Range	Accuracy	Resolution
20mV	± (0.35%RGD+10)	1uA
200mV		10uA
2A	± (0.8%RGD+10)	100uA
20A		1mA

Max Input voltage drop: 200mV

Max .Input current: 20A (within 15s)

Overload protection: 2A/250V fused, 20A/250V fused

AC Current (ACA)

Range	Input frequency	Accuracy	Resolution
200mA	50Hz-5KHz	± (0.8%RDG+80)	10uA
2A	50Hz-400Hz	± (1.0%RDG+50)	100UA
20A			1mA

Max input voltage drop: 200mV

Max Input current: 20A (within 15s)

Overload protection: 2A/250V fused, 20A/ 250 V fused

Resistance (Ω)

Range	Accuracy	Resolution
200 Ω	± (0.1%RGD+20)	0.01 Ω
2K Ω	± (0.1%RGD+5)	0.1Ω
20K Ω		1 Ω
200K Ω		10 Ω
2m Ω		100 Ω
20M Ω	± (0.4%RGD+5)	1K Ω

Open voltage : less than 3V

Overload protection: 250 V DC or AC peak value

Capacitance (CAP)

Range	Accuracy	Resolution
20nF	± (3.5%+20)	1nF
2uF		100nF
200KHz	± (5%+30)	10nF

Measuring frequency: approximately 400Hz

Overload protection: 36 V DC or AC peak value

Frequency (Freq)

Range	Accuracy	Resolution
20KHz	± (1.0%RGD+20)	1Hz
200KHz		10Hz

Input sensitivity: 500mV rms

Overload protection: 250V DC or AC peak value (within 15s)

HFE Measuring

Range	Displaying	Test condition
HFE NPN OR PNP	0-1000.0	Basic current is approx .10µA ,vce is approx .3V

Diode and Continuity Test

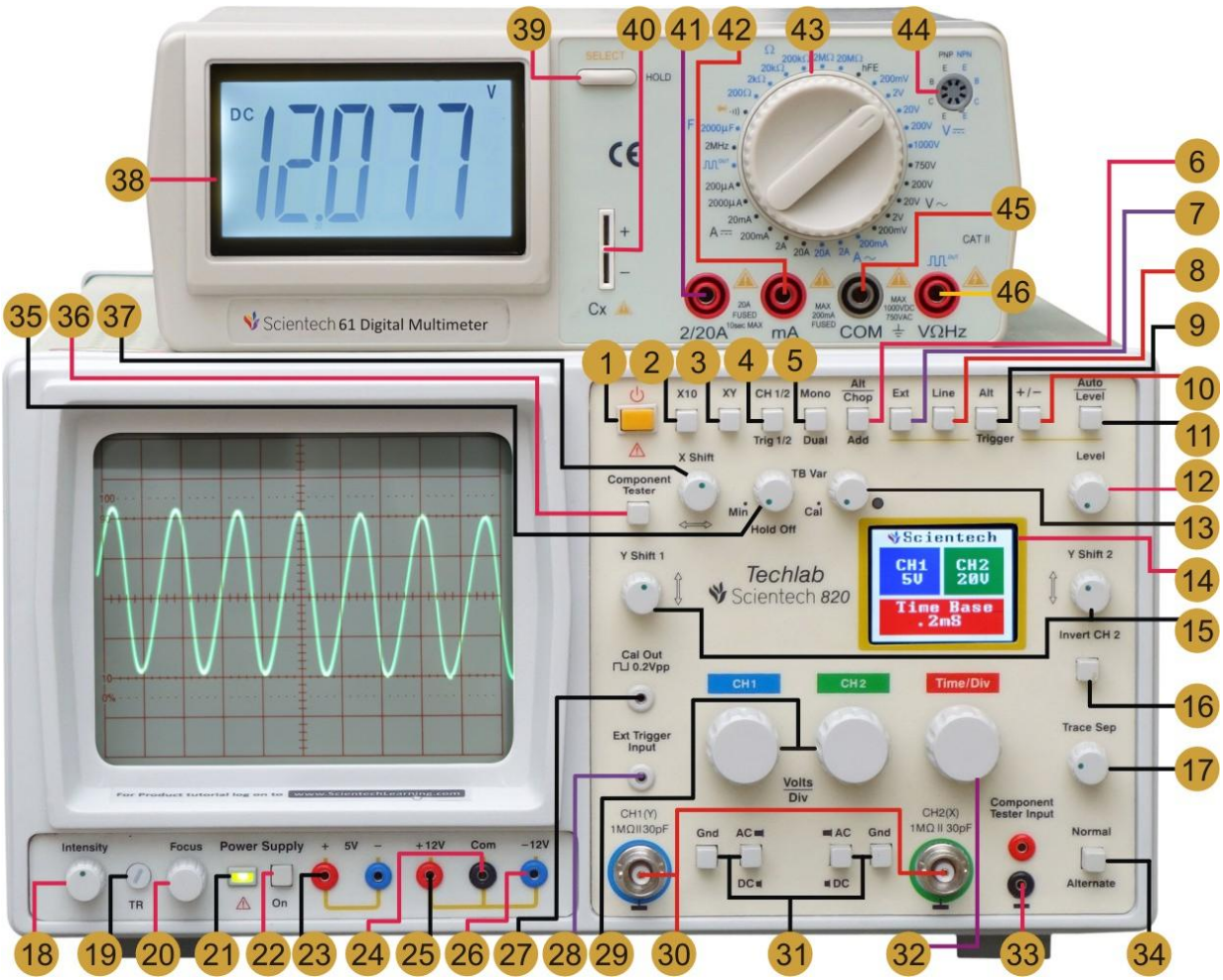
Range	Description	Test condition
	The measuring value is the approx value for forward voltage drop .when the resistance under tested is less than 70 Ω ± 20 Ω ,buzzer sound and display the approx value the open voltage is approx .3V	Forward DCA is approx.1mA ,backward DCV is less than 3V

Overload protection: 250 V DC and AC peak value.

(Subject to change)

Techlab Scientech 820

Front Panel Diagram



Front Panel Controls

(1) Power 'On/Off' : Push button switch for supplying power to instrument.

(2) X10 : Switch when pushed gives 10 times magnification of the X signal.

(3) XY : Switch when pressed cuts off the time base & allows access to the external horizontal signal to be fed through CH 2 (used for X-Y display).

(4) CH 1/2 & Trig 1/2 : Switch selects channel & trigger source (released CH 1, Trig 1 & pressed CH2, Trig 2).

(5) Mono/ Dual : Switch selects Mono or Dual trace operation.

(6) Alt/ Chop/ Add : Switch selects alternate or chopped in Dual mode. If Mono is selected then this switch enables addition or subtraction of channel i.e. CH 1 ± CH 2.

(7) Ext : Switch when pressed allows external triggering signal to be fed from the socket marked Trigger Input (27).

(8) Line : Switch when pressed displayed signal synchronized with mains line frequency.

(9) Alt : Selects alternate trigger mode from CH 1 & CH 2. In this mode both the signals are triggered simultaneously.

(10) Slope (+/-) : Switch selects the slope of triggering, whether positive going or negative going.

(11) Auto/Level : Switch selects Auto/Level position. Auto is used to get trace when no signal is fed at the input. In Level position the trigger level can be varied from the positive peak to negative peak with Level Control.

(12) Level : Controls the trigger level from peak to peak amplitude of signal.

(13) TB Var : Controls the time speed in between two steps of Time/Div switch. For calibration put this pot fully anticlockwise at Cal position.

(14) Digital Readout : LCD window for displaying Digital Readout for Volt/Div. & Time/Div. settings.

(15) Y Shift 1 & 2 : Controls provided for vertical deflection of trace for each channel.

(16) Invert CH 2 : Switch when pressed invert polarity of CH 2.

(17) Trace Sep	**:**	Trace Separator x1 & x10 in 4 trace operation (Alt).
(18) Intensity	**:**	Controls the brightness of the trace.
(19) TR	**:**	Trace Rotation controls the alignment of the trace with graticule (screw driver adjustment).
(20) Focus	**:**	Controls the sharpness of the trace.
(21) Power LED	**:**	It is indication for Power Supply On/Off
(22) Power	**:**	Push button switch to supply power to power supply unit.
(23) + 5V Socket	**:**	Output socket for + 5V DC.
(24) G	**:**	Common ground socket for power supplies.
(25) + 12V Socket	**:**	Output socket for + 12V DC.
(26) -12V Socket	**:**	Output socket for -12V DC.
(27) Cal Out	**:**	Socket provided for square wave output 200 mV used for probe compensation and checking vertical sensitivity, etc.
(28) External Trigger Input	**:**	Socket provided to feed external trigger signal in External Trigger mode.
(29) Volts/Div CH1	**:**	Switch selects Volt/Div. step for CH 1 & CH2
(30) CH 1 (Y) & CH 2 (X)	**:**	BNC connectors serve as input connection for CH 1 & CH 2. Channel 2 input connector also serves as Horizontal external Input.
(31) DC/AC/ GND	**:**	Input coupling switch for each channel. In AC the signal is coupled through 0.1MFD capacitor.
(32) Time /Div	**:**	Switch selects Time/Div. steps.
(33) Component Tester Input	**:**	To test any components in the CT mode, put one test prod in this socket and connect the other test prod in ground socket.
(34) X Shift	**:**	Controls horizontal position of the trace.
(34.) Normal/Alternate	**:**	Switch selects Normal (x1) or Alternately expanded (x1 & x10) simultaneous positions.
(35.) Hold 'Off'	**:**	Controls Hold Off time between sweeps. Used for Stable Triggering of composite signals.
(36.) Component Tester	**:**	Switch when pressed starts Component tester operation.
(37.) X Shift	**:**	Controls horizontal position of the trace.
(38.) LCD Display	**:**	LCD Displayed parameters for Digital Multimeter

(39.) Hold Key

(40.) Capacitance measuring plug

(41) 20A Input terminal

(42) Less than 2A input terminal

(43) Function Knob:

(44) HFE Plug

(45) COM

(46) V Ω Hz input terminal

Back Panel Controls

(47) Power switch

(48) 220/ 110V switch

(49) Fuse

(50) Power plug

(51) Fuse : 350 mA fuse is provided at the back panel. Spare fuse is provided inside the instrument.

(52) Z mod : Banana socket provided for modulating signal input i.e. Z-modulation.

(53)  : Banana socket provided for saw tooth output (5 Vpp approximately).

Operating Instructions

General Information:

The 30 MHz Dual Trace **Techlab Scientech 820** is a compact, low line and just trouble free new generation Minilab. It is technically advanced, as particularly illustrated by the increased use of microcontroller circuits. The logical arrangement of the controls & connectors makes it easy to become familiar with the operation of the instruments. However, even, experienced users of Oscilloscopes should read the following instructions thoroughly before using the instrument.

Operating Conditions:

Ambient temperature range for operation: 0°C - 40°C; 80% RH

Ambient temperature range for storage transportation: -20°C to + 70°C.

The instrument should be placed in a clean and dry room and should be operated in normal position; however, the convection cooling must not be impaired.

First Time Operation & Presetting:

At the time of delivery, the instrument is set at 230 V AC mains voltage. To obtain a display:

- All push buttons should be in the released position.
- Instrument is turned ‘On’ by pressing "Power" push button. An LCD indicates that the instrument is ‘On’. It is recommended to switch on the instrument for about 30 minutes prior to commencement of any calibration check.
- If no trace is visible after a warm-up of one minute:
  - **a.** Check "Intensity". It is possible that this control needs to be increased, rotate knob clockwise.
  - **b.** Bring X&Y “Shift” controls in the centre. Check Auto/Level controls bring it in Auto position.
- If only a dot appears [Caution, the CRT phosphor could be damaged under this condition probably] the push button for XY is pressed. If this is so, it should be released.
- Now, the trace should appear and the "Intensity" control should be adjusted for average brightness, while optimum sharpness is obtained by adjusting the "Focus" control.
- At the same time both input coupling switch "DC-AC-Gnd" should be in the "Gnd" position. Thus, the inputs of the Y-amplifiers are grounded preventing the introduction of unwanted signals.
- Check Time/Div. & Volts/Div. function by using rotary knobs.

Type of Signal Voltage:

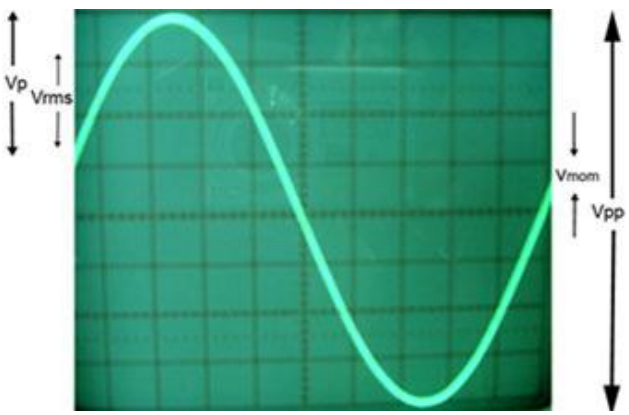
All signals whose frequency spectrum is below 30 MHz can be displayed on the Scientech 820

- Simple electrical processes such as sinusoidal RF and AF signals or 50 Hz ripple voltages are easily displayed by the instrument.
- However to display square or pulse shaped signals one has to remember that their harmonic content must also be transmitted along with the fundamental. Hence the bandwidth of the vertical amplifier must be set considerably higher than the repetition of logic and pulse signals, particularly, if the duty cycle permanently changes during the operation. Otherwise, the display will move up and down without any change.
- Display of composite signals which do not contain any suitable level components for triggering cause greater problems. To obtain a well triggered display in such cases, it is necessary to use the time base 'Var' control.
- To be used as an AC or DC voltage amplifier, each channel is provided with an 'AC-DC' switch. Under normal conditions AC mode is used. Use of DC mode is recommended only when acquisition of the DC voltage content signal is absolutely necessary. However, when investigating very low frequency pulses, disturbing ramp offset may occur with AC coupling. In this case DC coupling must be used DC voltages are always measured in the 'DC' position. DC operation is to be recommended even for the representation of logic and pulse, particularly under conditions when the duty cycle changes permanently during the operation, else, the display will move up and down with change.

Magnitude of Signal Voltage:

Generally alternating voltage data normally refers to effective values (rms = root mean square value). But, for signal magnitude and voltage in Oscilloscope tests the volt peak-to-peak (Vpp) value (which is the value of real potential difference between the most positive and most negative points of a signal waveform) is taken.

To convert a value of sinusoidal wave displayed on the Techlab screen to its effective value, the resulting voltage peak-to-peak value has to be divided by 2.83. Conversely Vpp is 2.83 times Veff (Vrms) and is equivalent to the sinusoidal voltage. The relations of the different voltages magnitude is given in the figure 1.

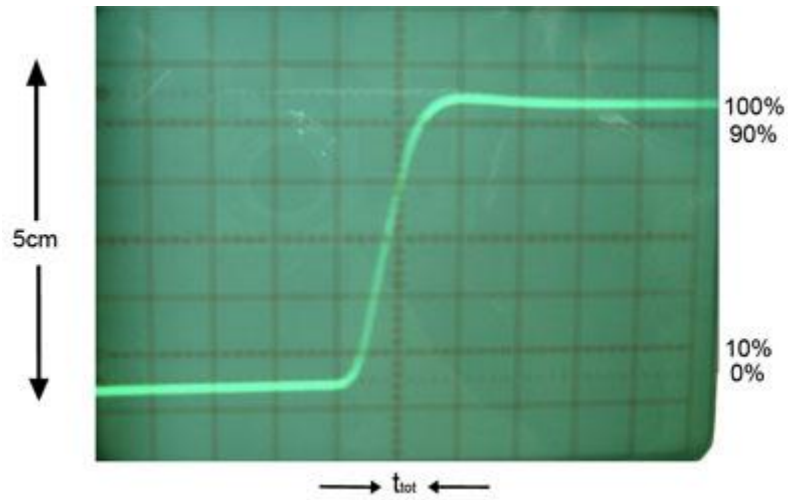


The minimum required voltage on the Y input for a display of 1cm amplitude is 2 mVpp. However, smaller signals can be displayed. The deflection coefficients on the input attenuators are indicated by Vpp/cm or mVpp/cm. The magnitude of the applied voltage is ascertained by multiplying the selected deflection coefficient with the display amplitude in cm. If an attenuator probe X10 is used, a further multiplication by 10 is required with direct connection to the Y input, signals upto 160 Vpp can be displayed. If the applied signal is superimposed on a direct voltage, the total value (DC Peak value of the alternating voltage) of the signal on the Y input must not exceed 400 V.

Time Values of Signal Voltage:

As a rule all signals displayed are repeating process having a recurring frequency or repetition rate which can be designated as "periods per second". For this, the units are indicated on the "Timebase" switch µs/cm, ms/cm and s/cm. accordingly, the "Timebase" dial is subdivided into two sectors. The duration of a signal period or a portion of the waveform is obtained by multiplying the relevant time fine control marked "Var" must be in its calibrated position for accurate measurement (arrow horizontal and pointing to the left).

If the time is relatively short as compared with the complete signal period, an expanded time scale (X10) should be applied. The ascertained time value is to be divided by 10 in this case. When investigating the pulse behaviour of a signal voltage, the critical feature is the rise time of the voltage step. To ensure that transients, ramp offsets, and bandwidth limits do not unduly influence the measuring accuracy, the rise time is generally measured between 10% and 90% of the vertical pulse height.



Connection of Test Signal:

The signal displayed should be fed to the Y input of the Techlab through a shielded test cable or by an X10 attenuator probe. The use of these cables with high impedance circuits is only recommended for relatively low frequencies (upto approximately 50 KHz). For higher frequencies, and when the signal source is of low impedance, a cable of matched characteristic impedance (usually 50 Ω) is recommended when investigating square or pulse waveforms with fast rise times, transient phenomenon on both the edge and top of the signal may become visible, if the correct termination is not used. It must be remembered that the 50 Ω through termination will dissipate a maximum of 2 watts. If an X10 attenuator probe is used, no termination is necessary. In this case, the connecting cable is matched directly to the high-internal impedance sources are only slightly loaded. Therefore, it is advisable to use X10 probes when the voltage loss due to the attenuation of the probe is compensated by a higher sensitivity setting on the **Techlab Scientech 820**. Using of probes also provides series protection for the input of the Techlab amplifier.

Note: That all attenuator probes must be compensated in conjunction with the Techlab.

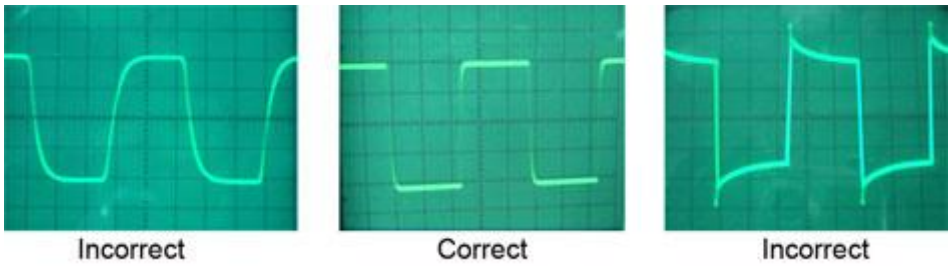
It is important to remember that for display of small signal voltage the position of the ground point on the test circuit should always be located as close as possible to the measuring point otherwise it will result in serious signal deformation from any invalidated currents through ground leads or chassis parts. Also ground leads of the attenuator probes should be ideally being as short and thick as possible.

If after connecting the test signal, the trace disappears suddenly, the signal amplitude may well be too great, i.e. the amplifier is over scaled. In such case, the attenuator switch should be turned anticlockwise, until the vertical deflection is only 3-7 cm. For signal amplitudes greater than 160 Vpp an X10 probe should always be used. If after connecting the signal the intensity of the trace is low, it is possible that the period of the test signal is substantially slower that the value set of the "Timebase" switch. This control should then be turned anticlockwise to a corresponding slower time coefficient.

Probe Compensation:

For the undistorted display of signals, the X10 attenuator probe must be compensated to match the input impedance of the vertical amplifier. This is done by connecting probe tip to the mini-socket on the instrument marked with a square wave, and adjusting the trimmer tool supplied with the probe. In **Scientech 820** the probe compensation is easily achieved due to the built in Square Wave Generator with a repetition frequency of approximately 1 KHz and an output voltage of 0.2 Vpp. The correct display is shown in figure given below.

The "Timebase" switch should be in the 0.2 ms/cm position. The signal has an amplitude of 0.2 Vpp ±1 %. If the attenuator switch is set to 50 mV/cm, the display will have a height of 4cms (1:1 probe). Since an attenuator probe is constantly subjected to considerable stresses, the compensation should be frequently checked.



Operating Modes:

The required operating modes are selected with push buttons in the vertical amplifier section. For selecting either channels, CH 1/CH 2 is pressed or released, while selecting either channel, it also selects triggering of respective channels. For selecting both the channels, Dual is pressed, the alternate or chop can be selected by pressing Alt/Chop switch. For addition of channel, release Mono/Dual switch & press Alt/Chop push button, which will display addition of CH 1 & CH 2 Similarly, subtraction of CH 1-CH 2 can be achieved by pressing Invert CH 2 & Add mode.
For X- Y operation the "XY" button must be pressed. The X signal is connected via the input of channel 2. The sensitivity of the horizontal amplifier during X - Y operation is selected by the CH 2 attenuator switch. The sensitivity and input impedance for both the X & Y axes are equal. Note that the frequency limit of the X axis is approximately 2.5 MHz (-3dB). Therefore, an increase in phase difference is noticeable at higher frequencies. The phase shift is 3 degrees approximately at 60 KHz.

Trigger and Time base:

Time base operation is important for obtaining a satisfactory stable display. If the "Auto" push button is not pressed the sweep generator will be triggered automatically. The time axis (baseline) is then also visible without applying a signal voltage. In this position practically all uncomplicated, periodically recurring signals above 30 Hz repetition frequency can be displayed in a stable locked-in position. Operation of the time base is then restricted mainly to adjusting the time setting.

To obtain a stable display at all frequencies the time base must be triggered synchronously with the applied signal. Triggering can be initiated by this signal itself or by a different external fed-in voltage, which must also be in synchronism. For this purpose, press the Ext button. The trigger signal (at least 0.6 Vpp) is applied to the socket marked "Trigger Input". On single channel operation a trigger signal may also be applied to the input of channel 2 (in this case trigger selector button "Trig 1/2" must be pressed). This method is recommended if the amplitude of the trigger signal does not fall in the range 0.6 - 6 Vpp, or if it is of unknown value. Using this method the signal can be adapted to the trigger input of the time base within a range of 2 mVpp to approximately 160 Vpp by means of the CH 2 attenuator switch. Initially the unknown external trigger signal should be displayed and then adjusted to peak-to-peak amplitude of 3-6 cm. The trigger signal can be taken either from CH 1 or CH 2. Selection is made by means of the button marked "Trig 1/2" on the front panel. If possible, it is always better to trigger with the less complicated signal. To select the trigger edge, use the"+/-" button. When it is not pressed, all displays start with a positive going rise.

If the pulse duty factor of a square signal changes drastically, and a part of this square wave deforms to a needle pulse, the operation of the "Level" control may become necessary, after pressing "Auto/ Level" switch. With composite signals the trigger facility is dependent on the occurrence of certain periodically recurring levels. The "Level" adjustment of these signals will require care.

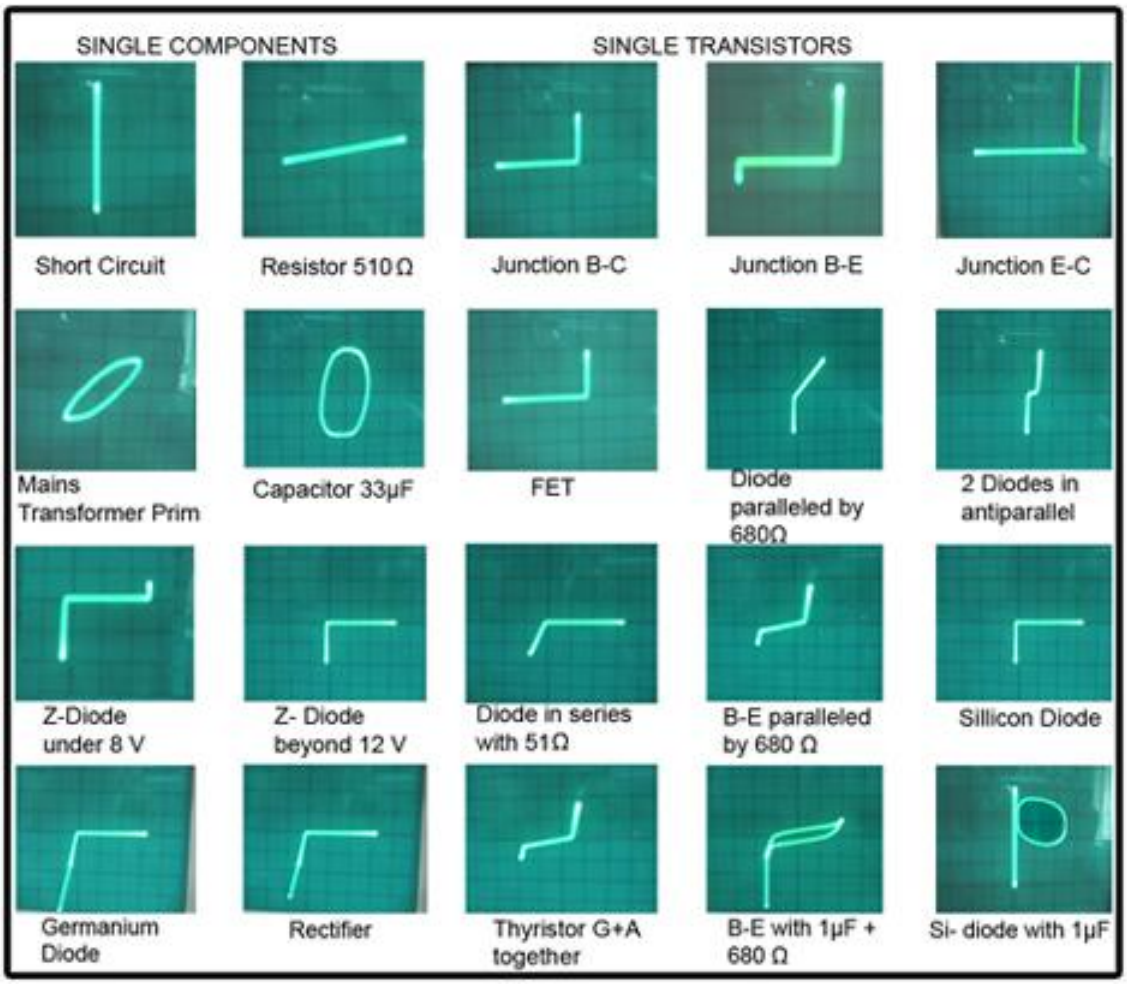
If no triggering point can be found on complex signals even after repeated and careful adjustment of the "Level" control, it may be possible to obtain one by adjusting the "Var" control.

All coefficient settings on the "Timebase" switch are calibrated when the "Var" control is set at the "Cal" position. With "Var" control in the clockwise position the sweep rate is made faster by a factor of 2.5. This factor in not precisely calibrated. With the X10 expansion of the sweep a maximum sweep speed of approximately 20 ns/cm is obtained. The choice of the optimum time coefficient depends on the repetition rate of the signal being measured.

Component Tester

Techlab Scientech 820 comes with an additional facility, a built-in Components Tester. This allows passive and active components like resistors, capacitors, inductors, transformer, silicon or germanium diodes, zener diodes, tunnel diodes, schottky diodes, transistors, JFETs, MOSFETs, UJTs, SCRs, TRIACs, and even linear and digital ICs to be tested while still in circuit. Using the **Scientech 820** Component Tester is very simple. Just push in the CT switch, plug in two test prods (supplied with instrument) one at the banana socket marked CT and the other at the ground socket. A horizontal line about 5 to 6 cms will be seen. On shorting the two tests prod tips a vertical line is seen. Connect the component under test across the prods. Some typical test patterns are shown on the following figure.

Only remember to keep the scope in the "CH 1" operating mode and Ground the input of CH 1.



Warranty

1. We guarantee this product against all manufacturing defects for **12 months** from the date of sale by us or through our dealers.
2. The guarantee will become void, if
   a. The product is not operated as per the instruction given in the Learning Material.
   b. The agreed payment terms and other conditions of sale are not followed.
   c. The customer resells the instrument to another party.
   d. Any attempt is made to service and modify the instrument.
3. The non-working of the product is to be communicated to us immediately giving full details of the complaints and defects noticed specifically mentioning the type, serial number of the product and date of purchase etc.
4. The repair work will be carried out, provided the product is dispatched securely packed and insured. The transportation charges shall be borne by the customer.

Hope you enjoy the Scientech Experience.

List of Contents

- BNC to BNC Cable .....1 No.
- BNC to Test Prod Cable .....1 No.
- Mains Cord.....1 No
- Test Prods Set (2mm) .....1 No.
- Test Probe 4mm (for Digital Multimeter) .....1 No.
- Product Tutorial (CD).....1 No.