Scientech

WiFiScope WS6

TiePie Engineering from Scientech

Speed up your Innovation
with a WiFi Oscilloscope

WiFiScope Connection possibilities

WiFi connected

Using a computer based oscilloscope was never easier than with the WiFiScope WS6: simply switch it on and start the software on the computer:

- no power cables required as it is battery powered and can operate hours on a fully charged battery
- no interface cables required as it uses WiFi to connect to the computer

This allows you to measure fully floating, fully isolated from your computer. The WiFiScope WS6 can be placed near any test subject that may be hard to reach, or on moving objects, where wired connections are not possible.

Because the WiFiScope WS6 is not connected to the computer, there is no risk of damaging the computer.

LAN connected

LAN Cable, CAT 5e or better, 100m max.

When measuring in remote locations where a wired network is available, the WiFiScope WS6 can also be used through its LAN port. Measurements can then be performed from any location via the network, without having the computer to be close to the test subject.

Using its 1 Gbit LAN connection, the WiFiScope WS6 can achieve higher streaming performance than via WiFi.

USB connected

USB Cable, 5m max.

When wireless measuring or LAN connected measuring is not required or not possible, the WiFiScope WS6 can also be connected via its USB3 port. This gives the benefit of even higher streaming performance. Additionally, when connected via USB, the WiFiScope WS6 can be combined with oscilloscopes via its CMI interface.

Hardware features

This powerful high speed WiFi oscilloscope combines fast sampling up to 1 GSa/s with high resolutions of 12, 14 and 16 bit and a large memory of 64 MSamples on all four channels. The oscilloscope supports continuous streaming measurements up to 200 MSa/s and can be synchronized with other oscilloscopes using the CMI interface to form a multi channel combined instrument with synchronized time base. The CMI interface is available by default on the WiFiScope WS6. Optionally, the WiFiScope WS6 can be delivered with SureConnect connection test and resistance measurement on each channel.

The flexibility and quality that the WiFiScope WS6 offers is unparalleled by any other oscilloscope in its class.

Rugged industrial design

The WiFiScope WS6 features a rugged design. Its enclosure is fitted with rubber protectors at the front and the rear. These protect the WiFiScope WS6 against damage by mechanical shocks. The rubber helps absorbing shocks and protects the connectors at the front and the rear of the WiFiScope WS6, these fall within the protected zone.

Additionally, the rubber prevents your WiFiScope WS6 from sliding. The rubber protectors have special notches that simplify stacking instruments. Holes are included that allow to connect a strap to hang the instrument near the test subject.

SureConnect

The SureConnect connection test feature of the WiFiScope WS6 tells you immediately whether your test probe or clip actually makes electrical contact or not. No more doubt whether your probe doesn't make contact or there really is no signal.

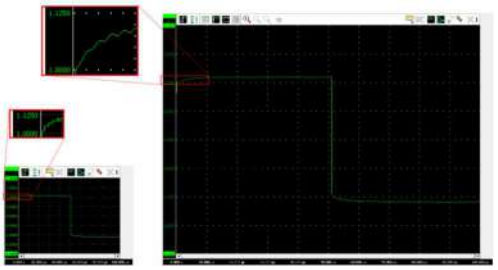
EMI pre compliance testing

The powerful capabilities of the WiFiScope WS6 - 1000XMES EMI analyzer give the user the possibility to quickly perform a good EMI compliance test. With this cost effective test, time and money are saved by avoiding extra visits to expensive EMC testing facilities. The supplied EMI probe set TP-EMI-HS6 contains three magnetic field (H field) probes and one electric field (E field) probe. The tripod ensures that the probes can be positioned properly at the object under test.

Multi instrument synchronisation

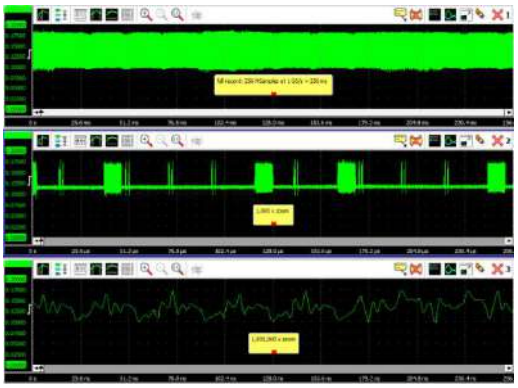
The WiFiScope WS6 is equipped with a sophisticated CMI synchronization bus, allowing to connect multiple WiFiScope WS6s to each other by means of TP-C50H Coupling cable CMIs, to use them as a combined instrument. All instruments will measure at the same sample frequency (0 ppm deviation!). Apart from a synchronization bus, the CMI also contains a trigger bus and a detection bus. The maximum number of instruments is only limited by the number available USB ports.

High accuracy



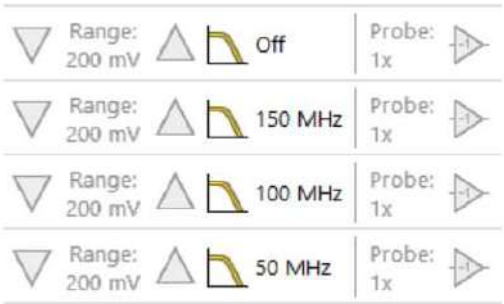
The WiFiScope WS6 measures with high resolutions of 14 and 16 bit. A signal measured with the WiFiScope WS6 therefore has 256 times more resolution than most standalone oscilloscopes, which usually have a low resolution of 8 or 9 bit. The high resolution of the WiFiScope WS6 precision oscilloscope allows for measuring signals with more accuracy, because the quantization error is much lower.

Large memory



When measuring at high sample rates, a long record length/large memory is necessary to be able to record a complete signal in the acquisition buffer. Where most oscilloscopes have 2.5 KSamples or 100 KSamples memory, the WiFiScope WS6 has up to 256 MSamples memory per channel, depending on the selected resolution and the number of active channels. When measuring at 14 bit resolution and all four channels, the available memory is 32 MSamples per channel. This gives the user 300 to 100000 times more memory. An advantage of a large memory is that once-only fast phenomena can be captured accurately or complete serial communication signal blocks can be measured all at once. For example complete serial communications, like CAN bus signals, can be measured all in one record to be reviewed and analyzed afterwards.

Bandwidth limit



It seems reasonable to assume that more bandwidth is better, but a wider bandwidth gives more noise. To reduce your noise you can switch on a bandwidth limiter for each channel of the WiFiScope WS6.

Software features

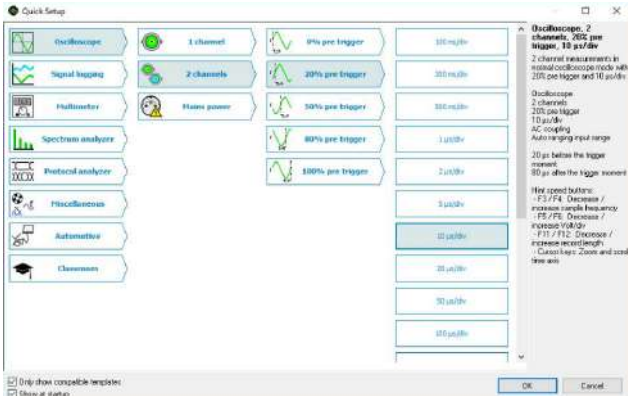
Versatile multi channel oscilloscope software

The WiFiScope WS6 is delivered with the versatile multi channel oscilloscope software, which transforms the WiFiScope WS6 into an oscilloscope, spectrum analyzer, data logger, multimeter and protocol analyzer.

Some of the powerful features of the Multi Channel oscilloscope software are indicated below, for a full description of the Multi Channel oscilloscope software, refer to the Multi Channel oscilloscope software pages.

Quick Setup

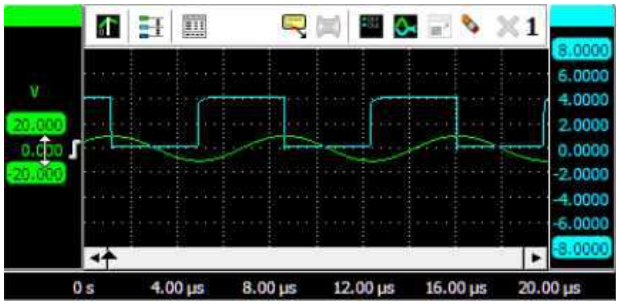
To simplify setting up the measurements, the multi channel oscilloscope software contains a large number of Quick Setups, for almost any application. A Quick Setup contains the basic settings for a specific measurement as well as additional information regarding the selected Quick Setup, like e.g. how your Handyscope and/or accessories need to be connected. Quick Setups can also contain reference signals. After loading the Quick Setup, that specific measurement can be performed and if needed, small adjustments to the setup can be made.

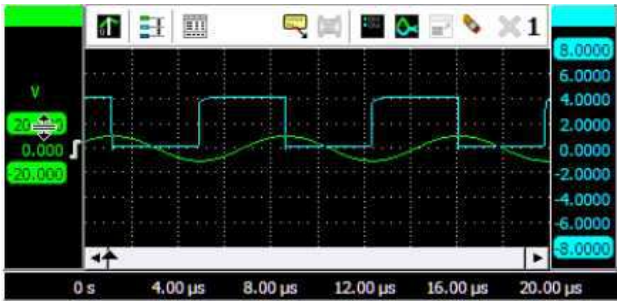


The Quick Setups are carefully organized in a tree structure, ordered by application. Just a few mouse clicks allow to perform a complex measurement.

Flexible signal displays

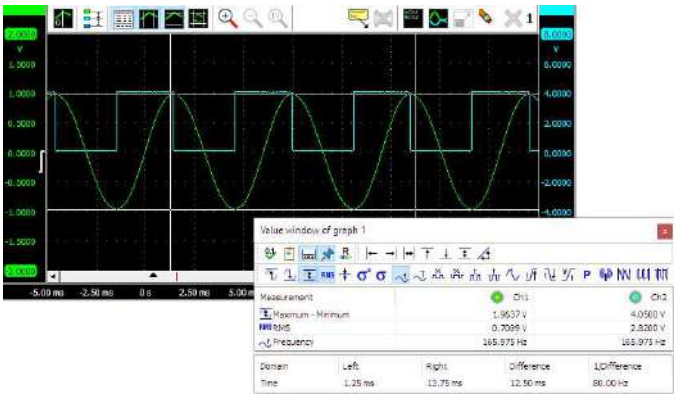
The multi channel oscilloscope software scope, spectrum analyzer and datalogger offer an ultimately flexible way to display all aspects of the measured signals. They can have one or more graphs, each displaying one or more signals, where each graph can display different parts of a signal. Graphs can display the signal(s) of your Handyscope in Yt mode, in XY mode or as frequency spectrum, with or without interpolation. Colors of all items in a graph can be set to any required value. Graph dimensions can be adjusted to any required size, graphs can be located in one single window or in separate windows, which can be located anywhere on the desktop.





Many automatic measurements

The multi channel oscilloscope software features many automatic measurements, that can be performed on the measured signals of your Handyscope or on a selection of the measured signals. Using the automatic measurements in the oscilloscope, any detail of your signal is revealed. Two sets of cursors, both horizontal and vertical, can be used to indicate a part of the signal that needs to be examined thoroughly. The automatic measurements include e.g.: Mininum, Maximum, Top-Bottom, RMS, Mean, Variance, Standard deviation, Frequency.



The measurement results are shown in a special value window that can be positioned anywhere on your computer screen. A convenient toolbar allows you to enable or disable a measurement with a single click. The measurement results can be copied to the clipboard e.g. to use them in reports. When printing the graphs, the cursors and measurements results are also included.

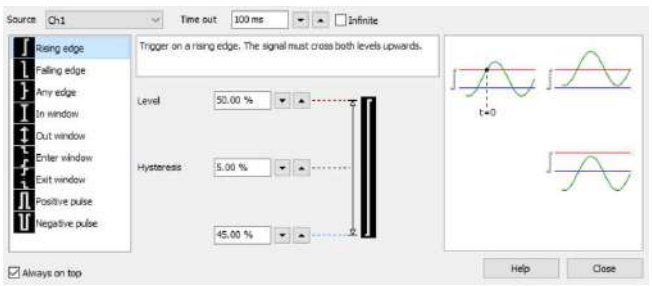
High detail spectrum analyzer

The high detail multi channel oscilloscope software spectrum analyzer takes full benefit of the deep memory of the high resolution USB Handyscopes. Not only gives the deep memory an incredible low resolution bandwidth of just 7.45 Hz at a frequency span of 500 MHz, it also gives a vertical dynamic range of 140 dB. The fast and powerful FFT routines with many user selectable window functions allow you to see the smallest frequency components in your signals.

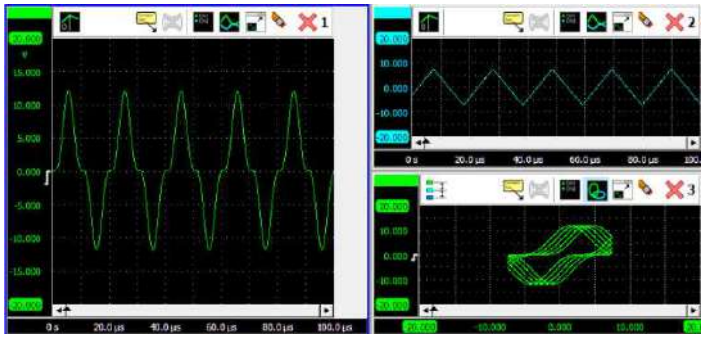
The multi display option of the multi channel oscilloscope software spectrum analyzer allows viewing multiple parts of the spectrum at the same time, giving a better understanding of the signals that are analyzed.

Advanced triggers

To control the advanced trigger capabilities of your Handyscope, the multi channel oscilloscope software provides for a convenient trigger properties dialog. It allows to view and set all properties of the trigger, like e.g. trigger source, trigger type, all levels and hystereses and optional time conditions. Additionally, it gives an explanation on the selected trigger type and examples that do cause a trigger (left column) and do not cause a trigger (right column).



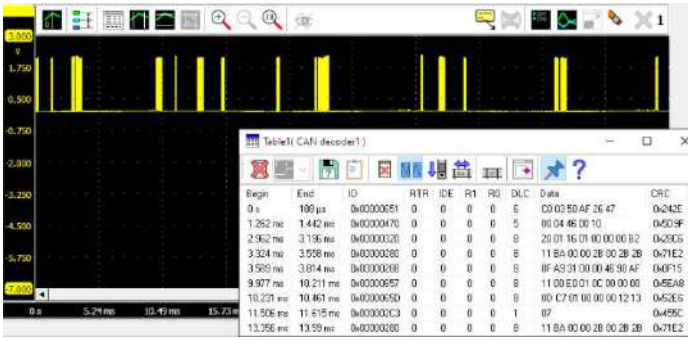
Unlimited zoom



When measuring at high sample rates, a long record length is a must, otherwise the acquisition buffer is full before the signal is measured. Therefore, our Handyscopes can have up to 256 MSamples record length per channel.

To view all that data conveniently and yet being able to see all details of the signals, the multi channel oscilloscope software scope, spectrum analyzer and data logger support sophisticated signal drawing routines with unlimited zooming capabilities. The full signal can be shown on any display size, without loss of information. Yet, you can zoom in to any required level, to see the finest details in the signals. Zooming factors of 1 million of even more are no problem, you can zoom in far beyond sample level.

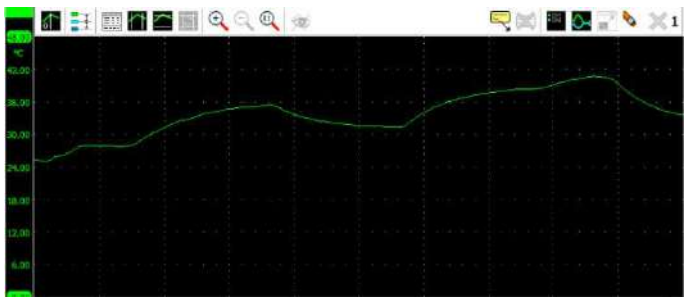
Analyze fast serial communication protocols



To analyze or debug your serial communications, simply measure the signal(s) transferring the protocol with your Handyscope and have them analyzed and decoded by one of the multi channel oscilloscope software protocol analyzers. The decoded information from the serial communications can be shown in tables, in graphs and in the multimeter.

A protocol analyzer is a useful tool when developing a hardware and/or software implementation of a communication bus. It can also be used when debugging device or bus failures.

24/7 Data logging



Measuring long term signal changes with your Handyscope is done with the multi channel oscilloscope software Data logger. The data logger logs your signal, continuously uninterrupted at high speed, 24 hour a day, 7 days a week. Results are immediately shown on the screen and all data can be stored to disk. A convenient toolbar lets you navigate through the stored files to find the important moments in the measurement.

Technical Specification

Acquisition system

Number of input channels	:	4 analog			
CH1, CH2, Ch3, CH4	:	Female BNC			
Type	:	Single ended input			
Resolution	:	8, 12, 14, 16 bit user selectable			
DC Accuracy	:	0.25 % (0.1 % typical) of full scale ± 1 LSB at 20°C to 25°C			
		To achieve rated accuracy, allow the instrument to settle for 20 minutes. When subjected to extreme temperatures, allow additional time for internal temperatures to stabilize.			
Ranges (Full scale)	:	±200mV	±2V	±20V	
		±400mV	±4V	±40V	
		±800mV	±8V	±80V	
Coupling	:	AC/DC			
Impedance	:	1MΩ / 25 pF ± 1%			
Maximum voltage	:	200 V (DC + AC peak , 10 KHz)			
Bandwidth	:	WS6-1000	WS6-500	WS6-200	
-3dB at 75 % of full scale input	:	250 MHZ	250MHz	250MHz	
Limit, selectable per channel	:	Off (250 MHz)	Off (250 MHz)		Off (250 MHz)
		150 MHz	150 MHz	150 MHz	
		100 MHz	100 MHz	100 MHz	
		50 MHz	50 MHz	50 MHz	
AC coupling cut off frequency (-3dB)	:	±1.5 Hz			
SureConnect	:	Optionally available (option S)			
Maximum voltage on connection	:	200 V (DC + AC peak < 10 KHz)			
Resistance measurement	:	Optionally available (option S)			
Ranges (Full scale)	:	1 kΩ	10 kΩ	100 kΩ	1 MΩ
		2 kΩ	20 kΩ	200 kΩ	2 MΩ
		5 kΩ	50 kΩ	500 kΩ	
Accuracy	:	1 % of full scale			
Response time (to 95%)	:	< 10 µs			
Maximum sampling rate	:	WS5-1000	WS5-500	WS5-200	
8 bit					
Measuring one channel	:	1 GSa/s	500 MSa/s	200 MSa/s	
Measuring two channels	:	500 MSa/s	200 MSa/s	100 MSa/s	
Measuring Three or Four channels	:	200 MSa/s	100 MSa/s	50 MSa/s	
12 bit					
Measuring one channel	:	500 MSa/s	200 MSa/s	100 MSa/s	
Measuring two channels	:	200 MSa/s	100 MSa/s	50 MSa/s	
Measuring Three or Four channels	:	100 MSa/s	50 MSa/s	20 MSa/s	
14 bit	:	100 MSa/s	50 MSa/s	20 MSa/s	
16 bit	:	6.25 MSa/s	3.125 MSa/s	1.25 MSa/s	

Maximum streaming rate 1	:	WS6-1000	WS6-500	WS6-200
8 bit				
measuring one channel	:	200 MSa/s 2	100 MSa/s 2	40 MSa/s
measuring two channels	:	100 MSa/s 3	50 MSa/s 3	20 MSa/s
measuring three or four channels	:	50 MSa/s 4	25 MSa/s 4	10 MSa/s
12 bit				
measuring one channel	:	100 MSa/s 3	50 MSa/s 3	20 MSa/s
measuring two channels	:	50 MSa/s 4	25 MSa/s 4	10 MSa/s
measuring three or four channels	:	25 MSa/s 5	12.5 MSa/s 5	5 MSa/s
14 bit				
measuring one channel	:	100 MSa/s 3	50 MSa/s 3	20 MSa/s
measuring two channels	:	50 MSa/s 4	25 MSa/s 4	10 MSa/s
measuring three or four channels	:	25 MSa/s 5	12.5 MSa/s 5	5 MSa/s
16 bit 6.25 MSa/s 6	:	3.125 MSa/s	1.25 MSa/s	

Sampling clock source		
Internal	:	TCXO
Accuracy	:	± 0.0001 %
Stability	:	± 1 ppm over 0°C to 55°C
Time base aging	:	±1 ppm/year
External	:	LVDS, on auxiliary connectors
Input frequency	:	10 MHz ± 1 % 16.369 MHz ± 1 %

Memory	:	Standard model	XM option via USB	XM option via WiFi/LAN
8 bit resolution	:	per channel	per channel	per channel
Measuring one channel	:	1 Msa	256 MSa	64 MSa
Measuring two channels	:	512 KSa	128 MSa	32 MSa
Measuring three or four channels	:	256 KSa	64 MSa	16 MSa
12, 14, 16 bit resolution				
Measuring one channel	:	512 KSa	128 MSa	32 MSa
Measuring two channels	:	256 KSa	64 MSa	16 MSa
Measuring three or four channels	:	128 KSa	32 MSa	8 Msa

Trigger		
System	:	Digital, 2 levels
Source	:	CH1, CH2, OR, digital external
Trigger modes	:	Rising edge, falling edge, any edge, inside window, outside window, enter window, exit window, pulse width
Level adjustment	:	0 to 100 % of full scale
Hysteresis adjustment	:	0 to 100 % of full scale
Resolution	:	0.006 % (14, 16 bits) / 0.025% (12 bits)
Pre trigger	:	0 to selected record length, 1 sample resolution
Post trigger	:	0 to selected record length, 1 sample resolution
Trigger hold-off	:	0 to 63 MSamples, 1 sample resolution
Trigger delay	:	0 to 8 GSamples, 1 sample resolution

Digital external trigger		
Input	:	Extension connector pins 1, 2
Range	:	0 to 2.5 V (TTL)
Coupling	:	DC
Jitter	:	≤ 1 sample

Multi-instrument synchronization

Combining instruments is only available when all instruments are connected via USB.

When instruments are connected via LAN or WiFi, combining is not available.

Maximum number of instruments	:	Limited by number of available USB ports
Synchronization accuracy	:	0 ppm
CMI interface	:	2x, CMI 1, CMI 2
Required coupling cable	:	TP-C50H Coupling cable CMI
Maximum coupling cable length	:	50 cm

Probe calibration

Output	:	Extension connector pins 3 (signal) and 6 (ground)
Signal	:	Square wave
Level	:	-1 V to 1 V
Frequency	:	1 KHz

Interface

Interface		
USB	:	USB 3.0 High Speed (5 Gbit/s); (USB 2.0 HighSpeed compatible)
Network	:	1 Gbps
WiFi	:	802.11

Power Requirements

Power	:	From USB, external input or built-in battery
Consumption	:	12 V_{DC} 2 A max
External power	:	From power adapter
Internal battery	:	Li-ion
Capacity	:	7000 mAh, 3.7 V

Physical

Instrument

Height	:	44 mm (1,7 inch)
Length	:	187 mm (6.7 inch)
Width	:	215 mm (5.2 inch)
Weight	:	791 g (27.9 ounce)
USB cord length	:	1.5 m (59 inch)

I/O connectors

Channel 1, 2	:	BNC
USB	:	USB 3.0 type B Super Speed socket
LAN	:	RJ45 socket
Extension connector	:	D-sub 9 pins female
Power	:	3.5 mm power socket
CMI connectors	:	2 x HDMI type C socket

System requirements

PC I/O connection	:	USB 2.0, USB 3.0 or USB 3.1
		RJ45
		WiFi
Operating system	:	Windows 10, 32 and 64 bits
		Linux (via own developed software using the LibTiePie SDK)

Environmental conditions

Operating

Ambient temperature	:	20°C to 25°C within rated accuracy (10°C to 40°C without specifications)
Relative humidity	:	10 % to 90 %, non condensing

Charging

Ambient temperature	:	0°C to 35°C
Relative humidity	:	10 % to 90 %, non condensing

Storage

Ambient temperature	:	0°C to 35°C
Relative humidity	:	5 % to 95 %, non condensing

Certification and Compliances

CE mark compliance	:	Yes
RoHS	:	Yes

Package contents

The WifiScope WS5 is delivered with:

Carry case	:	Carry case BB452
Instrument	:	WiFiScope WS6
Probe	:	4x Oscilloscope Probe 1:1-1:10 - HP-9250
Accessories	:	Handyscope / WiFiScope power supply USB3 cable, 1.5 m long network cable, 3 m long
Software	:	for Windows 10, via website
Drivers	:	for Windows 10, via website
Software Development Kit	:	for Windows 10 and Linux, via website
Manuals	:	instrument manual and software user's manuals color printed and digital, via website

Subject to Change

Scientech Technologies Pvt. Ltd.
94, Electronic Complex, Pardesipura, Indore-452010, India.
✆ +91-731-4211100, ✉ info@scientech.bz, www.ScientechWorld.com, Helpline : +91 9755591500