TELEDYNE TEST TOOLS
Everywhereyoulook™

T3CP Current Probes Manual

DC/AC Current Probes

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Contents

Safety Instructions

Follow these instructions to keep the probe operating in a correct and safe condition. Observe generally accepted safety procedures in addition to the precautions specified here. **The overall safety of any system incorporating this product is the responsibility of the assembler of the system.**

Symbols

These symbols appear on the probe body or in documentation to alert you to important safety considerations.

	**CAUTION**, possibility of electric shock.
	**CAUTION** of damage to probe or instrument, or **WARNING** of hazard to health. Attend to the accompanying information to protect against personal injury or damage. Do not proceed until conditions are fully understood and met.
	Do not apply around or remove from **UNINSULATED HAZARDOUS LIVE** conductors which may render electric shock, electric burn, or arc flash.
	Equipment protected by double insulation or reinforced insulation.
	**CAUTION**, hot surface.

Precautions

Comply with the following safety precautions to avoid personal injury or damage to your equipment:

Use only as specified. The probe is intended to be used only with compatible Teledyne LeCroy instruments. Using the probe and/or the equipment it is connected to in a manner other than specified may impair the protection mechanisms.

Do not use the probe for measurements on Mains circuits. The probe should only be applied around or removed from insulated, limited-energy circuit conductors that are not directly connected to the mains.

Do not overload; observe all ratings. To avoid electric shock or fire, do not connect the current probe to any wire that carries voltages or currents that exceed the ratings of the probe.

Connect and disconnect properly. Connect the probe to the test instrument before connecting to the circuit/conductor being measured.

Avoid damaging the cable through excessive bending.

Never install or remove the probe on bare conductors which are energized. The transformer core and shield are grounded but not insulated and may contact the conductor when the locking lever is open.

Be careful not to damage the insulation surface when making measurements. Before clamping to the conductor being measured, check that the insulation on the conductor is undamaged, and take care not to damage the insulation when clamping the conductor. Any damage to the insulation could cause an electric shock.

Use only indoors within the operational environment listed. Do not use in wet or explosive atmospheres.

Do not remove the probe's casing. Touching exposed connections may result in electric shock.

Keep product surfaces clean and dry.

Comply with the maximum input current vs. frequency derating when measuring current that includes a high frequency component. Using the probe at high frequencies or in strong magnetic fields may cause the device to become abnormally hot, resulting in fire, equipment damage or burns.

Do not operate with suspected failures. Before each use, inspect the probe and accessories for any damage such as tears or other defects in the probe body, cable jacket, accessories, etc. If any part is damaged, cease operation immediately and sequester the probe from inadvertent use.

NOTE: Depending on the amplitude and frequency of the current being measured, the sensor head may emit a resonant sound. This sound may also occur during demagnetizing operation, but it does not represent a malfunction (device failure).

PRODUCT OVERVIEW

T3CP30-50: 30 Amps, 50 MHz
T3CP30-100: 30 Amps, 100 MHz
T3CP50-50: 50 Amps, 50 MHz
T3CP150-12: 150 Amps, 12 MHz
T3CP500-5: 500 Amps, 5 MHz

Teledyne Test Tools new T3CP series current probes are wide bandwidth DC/AC active current probes, featuring high bandwidth, fast and accurate waveform capture, measurement accuracy up to 1% and low circuit insertion loss. These probes can be used with any oscilloscope having a high-impedance BNC input.

Key Features

- Accurate and easy current measurements.
- Wide bandwidth.
- Combined DC and AC measurements.
- Over-current protection with dual indicators.
- High and low range / sensitivity selection (dual range).
- Low current measurements feature.
- Degaussing and automatic zero setting.
- User control of range / sensitivity selection, degaussing and automatic zero.

Applications

- Switching and linear power design.
- Single and multi-phase inverters.
- Consumer electronics and household appliances.
- Electric vehicle motor, power train and drive electronics.
- Power component measurements.
- Domestic and industrial photo-voltaic (PV) system design.
- LED lighting Power design.
- Industrial and military control electronics.
- Research and development.
- Universities. General electronics education and power focused courses.

T3CP Product Description

1) Sensor Head

The T3CP measurement clamp head where the DUT conductor is placed. The measurement clamp head contains a precision semi-conductor sensor that could be damaged by drastic changes of environmental temperature, external pressure, excessive vibration and shock. Please be careful whilst taking a measurement and using the probe.

2) Opening lever

The operating lever used to open the sensor head. Pull the lever back away from the jaw to open the sensor head. Put in the cable under test, close the jaw and push the lever to lock the sensor head ready to measure the current. The opening lever must be in the locked state to make accurate measurements.

3) BNC Output Connector

The standard BNC port that can be connected to any brand of oscilloscope using a standard BNC Coaxial Cable. The oscilloscope input should be set to 1 MOhm and the oscilloscope channel scaling set according to the table in 9 below.

4) Overload Indicator LED

If / when the current under measurement exceeds the maximum current, the red LED will light and the buzzer will sound as an overload alarm.

5) Jaw unlocked indicator

When the light is on, it means that the opening lever is in the unlock state. Make sure that the jaw is in the lock state for accurate measurements.

6) Degaussing and Zero Setting Indicator

After pressing the degaussing / zero button, the indicator light will be green, and after degaussing, the indicator light will turn off. The buzzer will make two short beeps after successful degaussing. The buzzer will make an extended beep of about one second if degaussing failed. See 8 below.

7) Range LED Indicator

The green LED indicates the selected range.

8) Degauss / auto zero button

Frequent usage of the T3CP current probe will generate a residual magnetic field within the measurement jaw. It is recommended to degauss and auto-zero before a measurement for better measurement precision. Press the degaussing and auto zero button to trigger the process (should be around 5s). Remove any DUT from the measurement jaw before degaussing. See 6 above.

9) High / Low Range Selection button

Select the high or low range depending on the measurement being made. Set the oscilloscope scaling accordingly. See the table below.

Model	T3CP30-50		T3CP30-100		T3CP50-50		T3CP150-12		T3CP500-5	
Ranges	5A	30A	5A	30A	7.5A	50A	30A	150A	75A	500A
Current Transfer Ratio	5A	1V / A	5A	1V / A	7.5A	1V / A	30A	0.1V / A	75A	0.1V / A
	30A	0.1V / A	30A	0.1V / A	50A	0.1V / A	150A	0.01V / A	500A	0.01V / A
Oscilloscope Input Scaling	5A	x 1	5A	x 1	7.5A	x 1	30A	x 10	75A	x 10
	30A	x 10	30A	x 10	50A	x 10	150A	x 100	500A	x 100
Minimum Measurable Current	5A	1mA	5A	1mA	7.5A	1mA	30A	10mA	75A	10mA
	30A	10mA	30A	10mA	50A	10mA	150A	100mA	500A	100mA

10) Power Supply Connection Socket

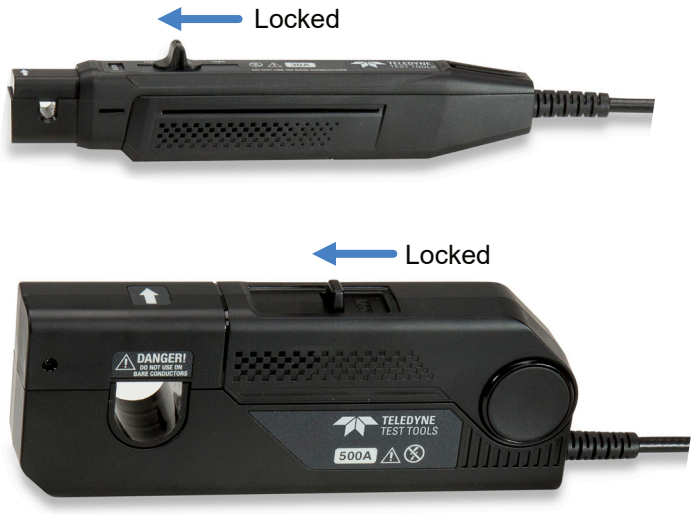
Connect the supplied external wall socket power supply to the T3CP current probe at this point.

Making Measurements

Before using the probe, check that the preparations described in Safe Probing have been undertaken.

- Inspect the current probe, power supply and cable to ensure that there is no damage. If the current probe, power supply or cable are damaged please contact Teledyne LeCroy service centre to arrange repair.
- The output of the current probe is terminated internally. Use the high input impedance 1 MΩ setting on the oscilloscope's input when making measurements. Set the oscilloscope's input coupling to DC. With the oscilloscope input grounded, adjust the oscilloscope's trace to the zero position. Connect the probe's output BNC connector to the oscilloscope's input BNC connector using a BNC to BNC cable. If the oscilloscope input impedance is set to 50Ω, the measurement data will be incorrect.

- Connect the power supply to probe and the power indicator will light. Select the appropriate measurement range using the Range Key.
- Ensure that the probe sensor is NOT clamped around any conductors. Slide the probe's Opening Lever into the LOCKED position as shown in Figure. Confirm that the sensor head is properly closed.



- Degauss / auto-zero the probe before making a measurement. The degauss / auto-zero button should be pressed. The probe will demagnetize the jaw measurement core and set the output to zero voltage. This is necessary if the jaw core has become magnetized through switching the power on and off, or by general measurement use. Always carry out degaussing and Zero Setting before making a measurement and without the DUT in the clamp. The degaussing and Zero Setting process takes a few seconds. During degaussing and Zero Setting, a demagnetizing waveform is output and can be seen on the oscilloscope. This waveform is generated internally within the T3CP current probe and is for the demagnitizing process, it has no useful meaning for the user.
- After degaussing and Zero Setting, the T3CP current probe buzzer will make two short beeps. If degaussing and Zero Setting failed, the buzzer will make a single beep, for one second. If the degaussing failed then ensure that no DUT or measurement conductor is in the measurement jaws, lock the jaws and retry the degaussing process.
- Do not degauss / demagnetize while the DUT conductor being measured is clamped within the measurement jaws. This could damage the components of the circuit being measured since the degaussing waveform may be induced into the DUT conductor. For the same reason, ensure that the DUT conductor being measured is not clamped within the measurement jaws when connecting power to the current probe. Demagnetizing waveforms are generated when connecting and switching on the T3CP current probe power supply.
- To make a measurement slide the opening lever to the open / unlocked position and open the sensor head jaws.

- Align the probe so that the probe’s current direction indication corresponds to the direction of current flow through the conductor to be measured, as shown below. Also, align the clamp so that the conductor is in the center of the sensor aperture.

- Slide the opening lever on the sensor head to the lock position until the UNLOCK indication disappears. Check that the opening lever is firmly locked, and the sensor head securely closed. You are now ready to make the measurement.

Safe Probing

This device is designed to comply with Safety Standards and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the device. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from device defects.

To avoid short circuits and potentially life-threatening hazards, follow these warnings and precautions:

- Never attach the clamp to a circuit that operates over the maximum rated voltage to earth.
- Do not clamp around bare conductors during measurement.
- While clamping and measuring, do not touch the clamp in front of the barrier, or the conductor being measured.
- Be careful to avoid damaging the DUT conductor insulation while taking measurements.
- Make sure that the oscilloscope connected to this device's output BNC connector is equipped with protective earthing with double-insulation construction.
- Do not allow the T3CP current probe to get wet, and do not take measurements with wet hands. This may cause an electric shock.
- Read and observe all warnings and precautions relating to electrical safety for the measuring instrument (typically an oscilloscope) being connected to the probe.
- Do not store or use the probe where it could be exposed to direct sunlight, high temperature, humidity, or condensation. Under such conditions, the probe may be damaged and insulation may deteriorate so that it no longer meets specifications.

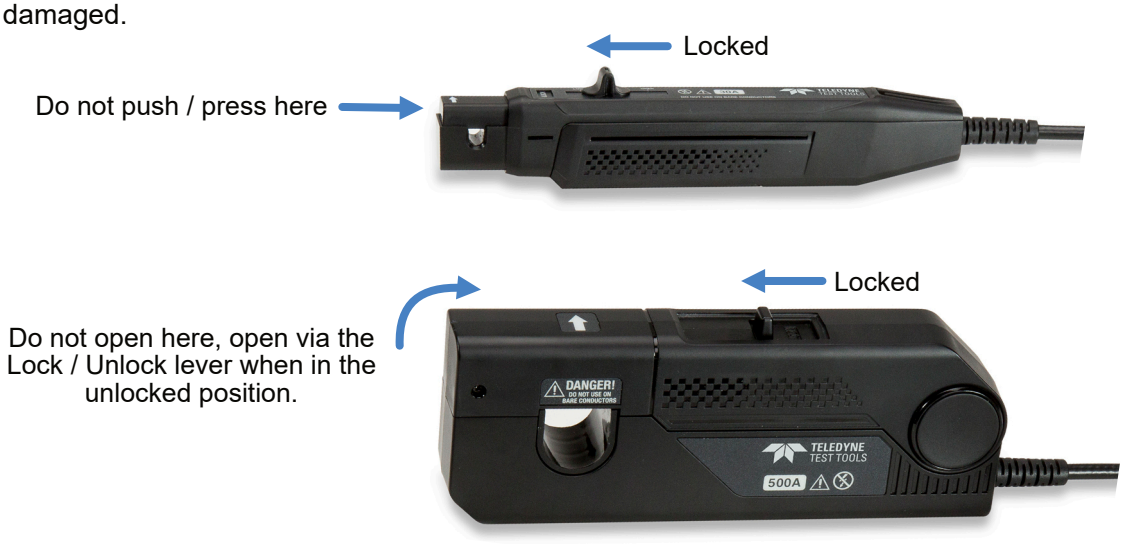
- Before using the probe for the first time, verify that it operates normally to ensure that no damage has occurred during storage or shipping. If you find any damage, contact your dealer or a Teledyne LeCroy representative.
- This device is not designed to be water or dust proof. To avoid damage, do not use it in a wet or dusty environment.
- The sensor head is a precision assembly including moulded components, a ferrite core, and a Hall Effect element. It may be damaged if subjected to sudden changes in temperature, mechanical strain or shock, and therefore great care should be exercised in handling it. Avoid damage to the T3CP probe by protecting it from vibration or shock during transport and handling, and be especially careful to avoid dropping.
- The matching surfaces of the sensor head (jaws) are precision ground, and should be treated with care. If these surfaces are scratched, performance may be impaired.
- Foreign substances such as dust on the contact surfaces of the sensor head can cause acoustic resonance and degrade measurement, so it should be cleaned by gently wiping with a soft cloth.
- To avoid damaging the sensor cable and power supply cable, do not bend or pull the cables.
- When the power is on, it is recommended to keep the jaws closed, except when clamping them onto the conductor to be measured. The facing surfaces of the core section can be scratched whilst it is open.
- Do not place any unclamped conductor with an electric current of a frequency of 10 kHz or more near the sensor head. Current flowing in the conductor nearby may heat up the sensor head and cause its temperature to rise, leading to damage to the sensor. For example, when one side of a out-and-return conductor is clamped and the other side is also placed near the sensor head, even if the electric current is lower than the maximum current, electric currents in both conductors will heat up the wires and raise the T3CP probe temperature. This could cause damage to the sensor.
- The maximum continuous input range is based on heat that is internally generated during measurement. Never input current in excess of this level. Exceeding the rated level may result in damage to the probe.
- The maximum continuous input range varies according to the frequency of the current being measured. See the Maximum Continuous Input Current graphs.
- If excess current is input, generated heat activates a built-in safety function that blocks normal output. If this happens, remove the input immediately (remove the sensor from the conductor being measured or reduce the input current to zero). Wait until the sensor has had sufficient time to cool before resuming operation.
- Even if the input current does not exceed the rated continuous maximum, continuous input for an extended period of time may result in activation of the safety circuit to prevent damage resulting from heating of the sensor.
- At high ambient temperatures, the built-in safety circuit may activate at current input levels below the rated continuous maximum.

- Continuous input of current exceeding the rated maximum or repeated activation of the safety function may result in damage to the probe.
- The probe is rated for maximum continuous input. Use the probe at RMS current input levels that are within the rated continuous maximums.The maximum peak input is for a single pulse width of ≤10 μs.
- When performing continuous measurements, it is necessary to be aware that the offset voltage may drift, depending on factors such as the ambient temperature and probe temperature.
- Some sound may be produced by resonance depending on the measured current frequency, but this resonance has no effect on measurements.
- When carrying out a measurement, press the opening lever until the **UNLOCK** indication disappears and check that the sensor head is properly closed. If the sensor head is not properly closed an inaccurate measurement will be made.
- Accurate measurements may be impossible in locations subject to strong external magnetic fields, such as transformers and high-current conductors, or in locations subject to strong external electric or magnetic fields, such as radio transmission equipment.

Operating Method

- Please make sure the current measured doesn’t surpass the maximum rated current of the probe. If the maximum current exceeds the maximum rated current of the probe the magnetic core will saturate leading to inaccurate measurements. The T3CP probe will need degaussing and zero set again.
- When power is first connected an offset might be present. The T3CP probe normally requires a 30 minute warm up time to stabilize the offset. If an offset is present allow the probe 30 minutes to warm up then degauss and set zero.
- If the T3CP probe surrounding temperature changes then check the zero setting of the probe and reset if necessary.
- The position of the conductor under test in the probe measurement jaw will influence the result. For highest accuracy results try to keep the conductor under test into the center of the measurement jaw.
- To make a measurement push the lock / unlock switch all the way until the unlock marker disappears. Please make sure the switch is locked and the measurement jaw is closed. If the measurement jaw isn’t closed, the measurements will be inaccurate.
- If measuring the high voltage side of a circuit containing high frequency noise components, the measurement result might be influenced by the high frequency noise components. Consider using the oscilloscopes’ bandwidth limit to reduce the high frequency noise, or consider measuring the low voltage side of the circuit.
- The continuous maximum input current range will change according to the frequency of the current under test. The probe will be damaged when operating beyond its specified range at any particular frequency. Please consult the T3CP probe derating curves in the specifications to see the maximum current at any particular frequency.

- When the input current continuously surpasses the maximum input range, the probe sensor self-protection will be activated. Please discontinue the measurement and allow the T3CP probe to cool before making another measurement. Degauss and check the zero level after the probe has cooled and before resuming measurements.
- The sensor protection circuit may be activated by high temperature even when the continuous current under test is below the maximum specified input.
- When the measured current input surpasses the maximum input current range too often, the current probe may be damaged.
- When opening the sensor head of the probe, be sure to open it with the opening lever. If the jaw is forced open when the sensor head is locked, the open / close mechanism and the jaw can be damaged.



Preparation before testing

- Connect the T3CP current probe to the oscilloscope using the BNC to BNC cable.
- Connect the T3CP probe power supply to the wall socket and connect to the T3CP current probe. Power up the current probe and the green LED power indicator will light.
- Set-up the oscilloscope: Ground the oscilloscope measuring channel, zero any oscilloscope channel offset and turn the oscilloscope coupling mode to 1MΩ, DC coupled.
- Select the T3CP current probe range according to the current to be measured. The default setting of the T3CP probe is to select the larger current setting.

Degaussing and Zero setting

- Connect the T3CP current probe to the oscilloscope (make sure the input impedance of the oscilloscope is set to 1MΩ, DC coupled).
- Ensure that the probe measurement jaw is empty and lock the probe jaw closed.
- Press the button to degauss and set the probe to zero. The probe will be beep as an indication of successfully degaussing and zeroing of the probe.

Measuring method

- Unlock the T3CP current probe jaw. Open the jaw and insert the cable to be measured noting the current direction indicator on the T3CP probe jaw in accordance with the direction of the current to be measured. Insert the conductor under test in the middle of the measurement jaw.
- Close and lock the T3CP current probe measurement jaw. Observe the waveform under test on the oscilloscope screen. Adjust the oscilloscope sensitivity settings for the best waveform. Utilize the current transfer ratio (oscilloscope input scaling) to transform the measured voltage from the T3CP current probe into an accurate current measurement.
- Change the oscilloscope Y axis from V(olts) to A(mps) if your oscilloscope supports this functionality.

Frequently Asked Questions and Tips

- Will the T3CP current probes work with oscilloscopes from brands other than Teledyne LeCroy and Teledyne Test Tools?
  The T3CP current probes will work with any oscilloscope that has a BNC input connector and a DC coupled 1MΩ input. The T3CP probe is powered by a standard wall socket power adaptor that is independent of the oscilloscope power.
- Can the T3CP current probes measure small currents?
  Yes. Each current probe in the T3CP range supports a dual range capability. The default power-on setting is for the less sensitive range to be selected (the higher range), but the control box allows the probe to be switched to a more sensitive range for lower current applications. The ranges for each current probe, and the minimum measurable current is detailed in the specifications. When measuring small currents, ensure that you accurately zero set and degauss the probe, and do not change the position of the probe hand grip. To observe the smallest most sensitive current waveforms please set the oscilloscope channel bandwidth filter to 20MHz to eliminate interference and noise. When measuring extremely small current (a few mA for example), one could make a few loops of the measurement cable through the probe measurement jaw and divide the result by the number of loops to obtain the actual current value.
- The T3CP is making inaccurate measurements, what can the problem be?
  Check that the oscilloscope is set to 1MΩ input impedance. Check that the oscilloscope's input channel is set to DC coupling and that the correct multiplication ratio is entered into the oscilloscope. Degauss and auto zero the probe. Ground the scope channel and ensure that there is no offset. Ensure that the lever on the probe jaw is in the locked position when making a measurement.
- When making measurements please do not let the measurement current exceed the value shown by the maximum current input rating curve verses frequency. If the max continuous current is greater than the rating curve verses frequency value then the probe may be damaged.
- To measure accurately, please degauss and zero set the probe, and make sure the probe jaw is locked during the measurement process.
- Always set the input impedance of the oscilloscope to 1MΩ.

- Make sure the probe jaw is locked during testing.
- If possible the probe should be located away from any interference sources such as a transformer or other magnetic devices. The method to judge if the probe is picking up interference is to put the probe close to the circuit under test. IF there's any output, there could be interference in the testing environment because the probe is connected to the circuit yet. Please always maintain your probe and do not use it in the humid environment.
- If there's anything wrong with the probe, please contact Teledyne LeCroy repair. A user should not dismantle the probe since this will invalidate the warranty.

Care and Maintenance

Cleaning

The exterior of the probe and cable should be cleaned only using a soft cloth moistened with water or isopropyl alcohol. The use of abrasive agent, strong detergents or other solvents may damage the probe.

Caution: The probe case is not sealed and should never be immersed in any fluid.

Specifications

Model	T3CP30-50		T3CP30-100		T3CP50-50		T3CP150-12		T3CP500-5	
Bandwidth (-3dB)	DC - 50MHz		DC - 100MHz		DC - 50MHz		DC - 12MHz		DC - 5MHz	
Risetime	≤ 7ns		≤ 3.5ns		≤ 7ns		≤ 29ns		≤ 70ns	
Continuous Maximum Input	30A rms		30A rms		50A rms		150A rms		500A rms	
Maximum Peak Input (≤10us)	50A peak		50A peak		75A peak		300A peak		750A peak	
Ranges	5A	30A	5A	30A	7.5A	50A	30A	150A	75A	500A
Overload	5A	≥ 5A	5A	≥ 5A	7.5A	≥ 7.5A	30A	≥ 30A	75A	≥ 75A
	30A	≥ 50A	30A	≥ 50A	50A	≥ 75A	150A	≥ 300A	500A	≥ 750A
Current Transfer Ratio	5A	1V / A	5A	1V / A	7.5A	1V / A	30A	0.1V / A	75A	0.1V / A
	30A	0.1V / A	30A	0.1V / A	50A	0.1V / A	150A	0.01V / A	500A	0.01V / A
Oscilloscope Input Scaling	5A	x 1	5A	x 1	7.5A	x 1	30A	x 10	75A	x 10
	30A	x 10	30A	x 10	50A	x 10	150A	x 100	500A	x 100
Minimum Measurable Current	5A	1mA	5A	1mA	7.5A	1mA	30A	10mA	75A	10mA
	30A	10mA	30A	10mA	50A	10mA	150A	100mA	500A	100mA
Amplitude Accuracy (DC, 45Hz - 66Hz)	5A	±1%±1mA	5A	±1%±1mA	7.5A	±1%±1mA	30A	±1%±10mA	75A	±1%±10mA
	30A	±1%±10mA	30A	±1%±10mA	50A	±1%±10mA	150A	±1%±100mA	500A	±1%±100mA
Delay Time (1)	21ns		21ns		21ns		40ns		60ns	
Maximum Measurement Conductor Diameter	5mm						20mm			
Probe Head to Control Box Cable Length	1m						1.5m			
Terminal Load	≥ 100 KOhms									
Probe Head Dimensions	176mm x 39.5mm x 18mm						174mm x 67.5mm x 30mm			
Control Box Dimensions	91.5mm x 40mm x 26.5mm									
Power Supply	DC 12V / 1A (supplied)									
Probe Weight	235gms						480gms		460gms	
Operating Temperature and Humidity	0°C - 40°C, ≤80%									
Storage Temperature and Humidity	-10°C - 50°C, ≤80%									
Operating Altitude	2000m									
Storage Altitude	12000m									
Safety Compliance	EN61010-1: 2010+A1:2019, EN61010-2-032:2019									
EMC Standard	EN61326-1:2013									

(1) Delay Time includes 5ns for the 1m BNC cable. Other length BNC cables would incur different delay times.

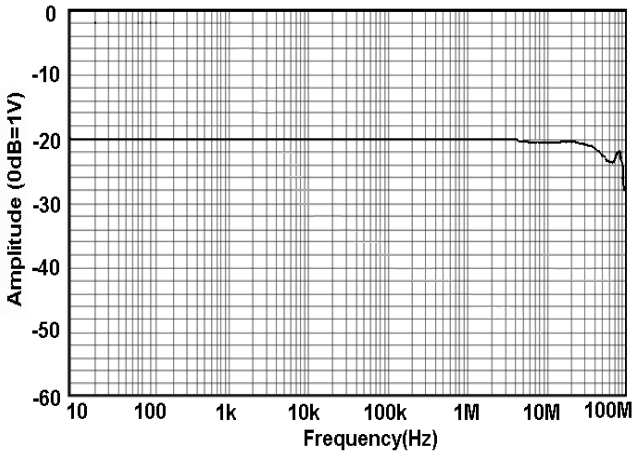
Safety Ratings

Probe Designation[1]	Type D
Measurement Category [2]	O (Other)
Safe Voltage Rating [3]	Use only on fully insulated conductors
Pollution Degree [4]	2

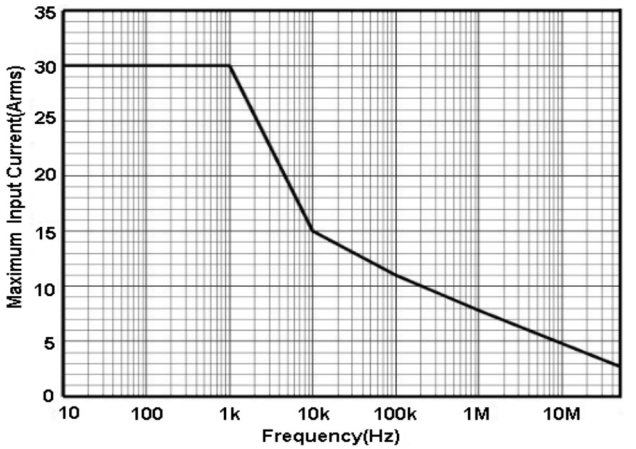
Definitions (per IEC/EN 61010-2-032:2019)

1. Type D current probe is intended to be applied around or removed from insulated conductors.
2. O refers to other circuits not intended to be directly connected to the Mains supply. Not rated for measurements within Measurement Categories II, III, or IV.
3. Not rated for measurements on uninsulated conductors.
4. Pollution Degree 2 refers to operating environment where normally only dry, non-conductive pollution occurs. Temporary conductivity caused by condensation must be expected.

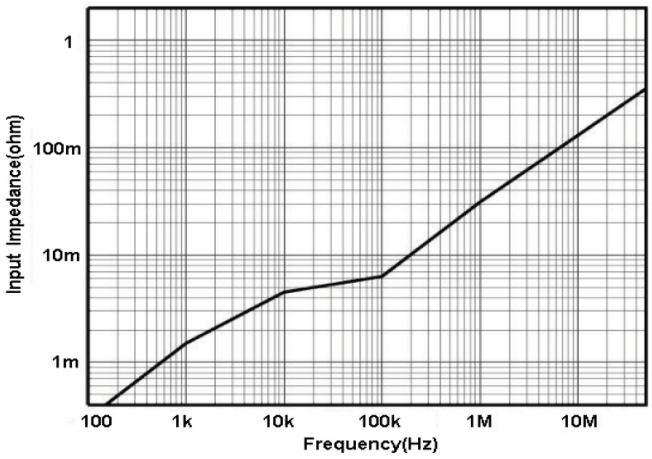
T3CP30-50 Frequency Response



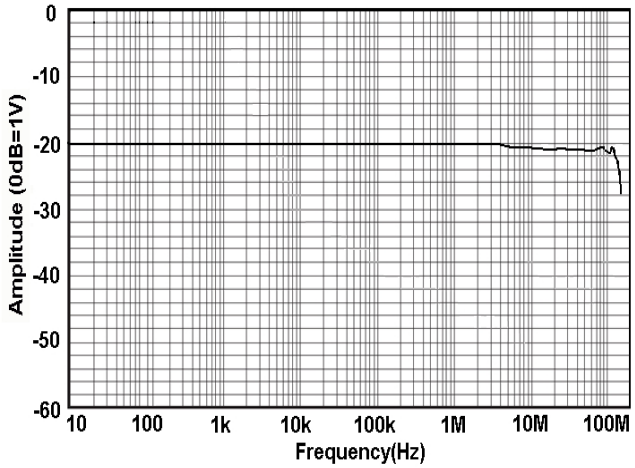
T3CP30-50 Continuous Maximum Current Input



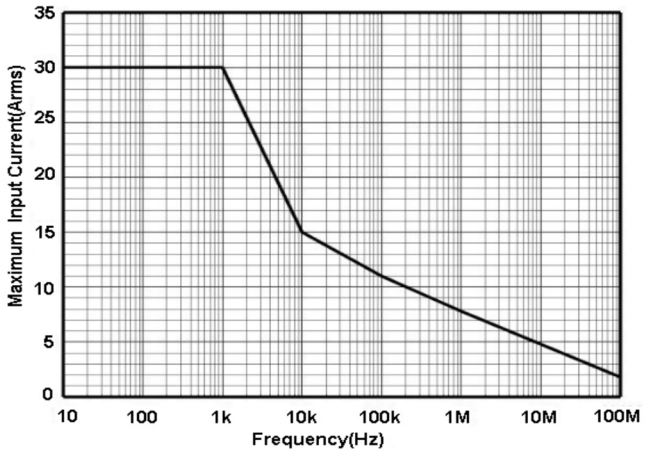
T3CP30-50 Insertion Impedance



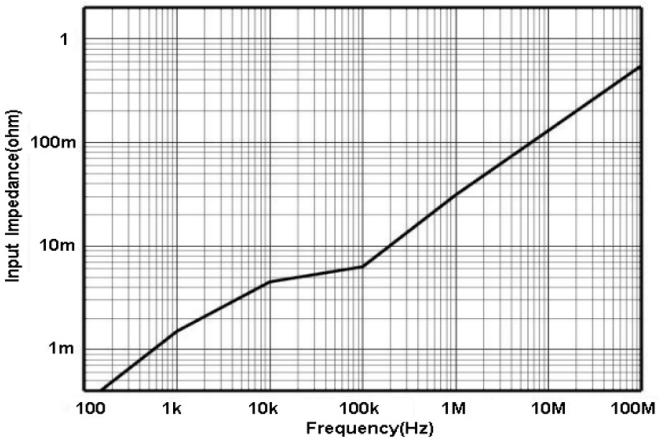
T3CP30-100 Frequency Response



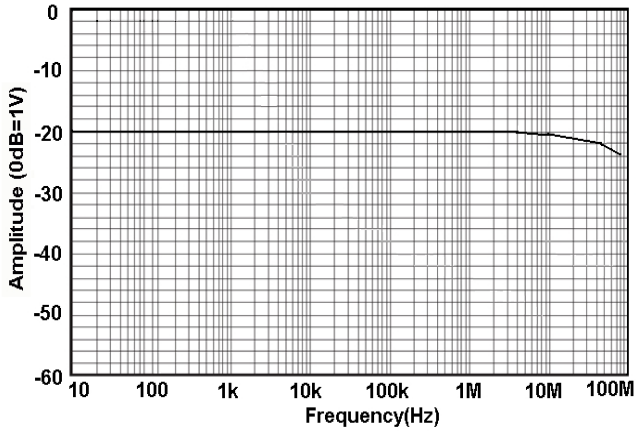
T3CP30-100 Continuous Maximum Current Input



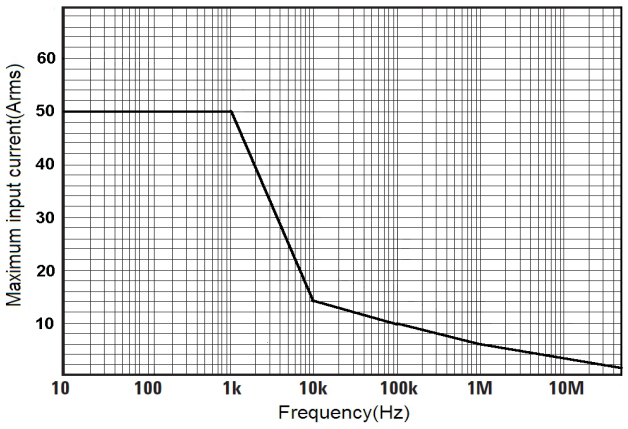
T3CP30-100 Insertion Impedance



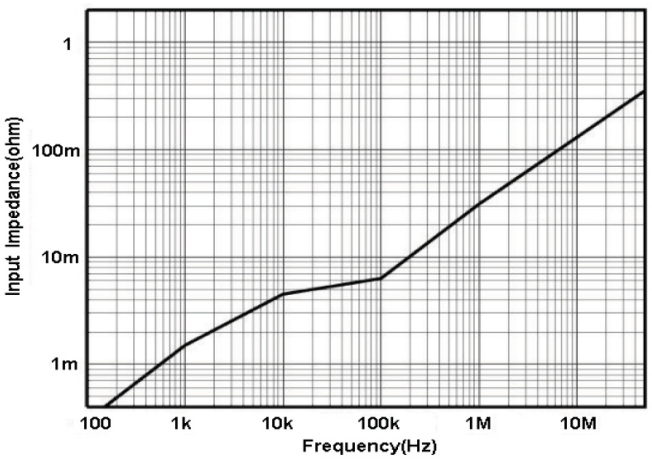
T3CP50-50 Frequency Response



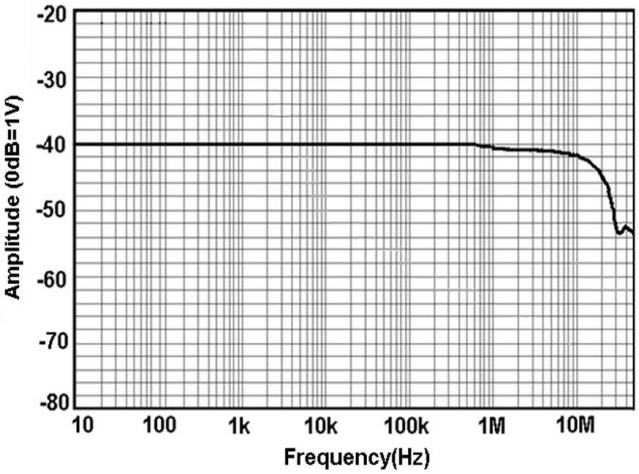
T3CP50-50 Continuous Maximum Current Input



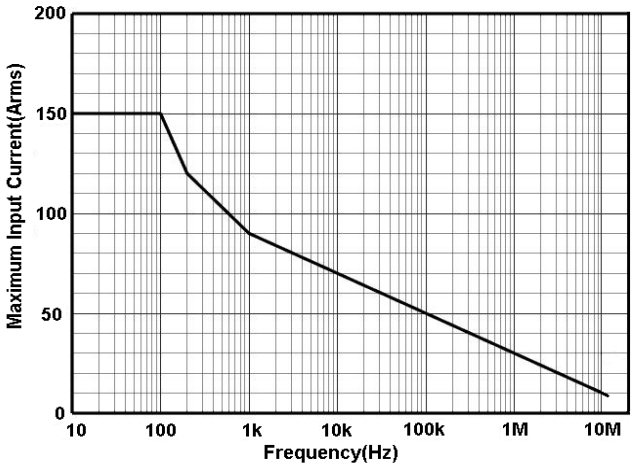
T3CP50-50 Insertion Impedance



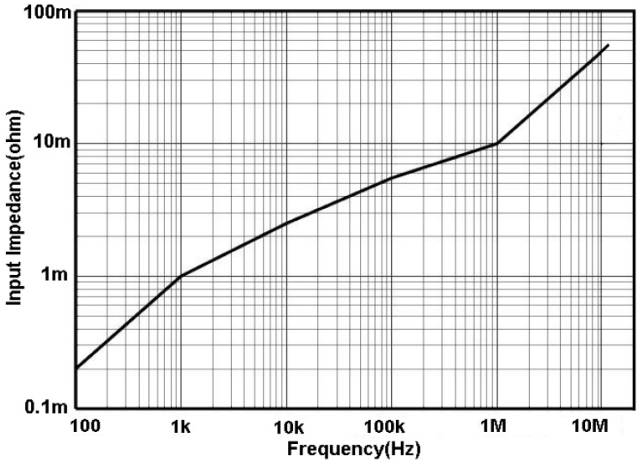
T3CP150-12 Frequency Response



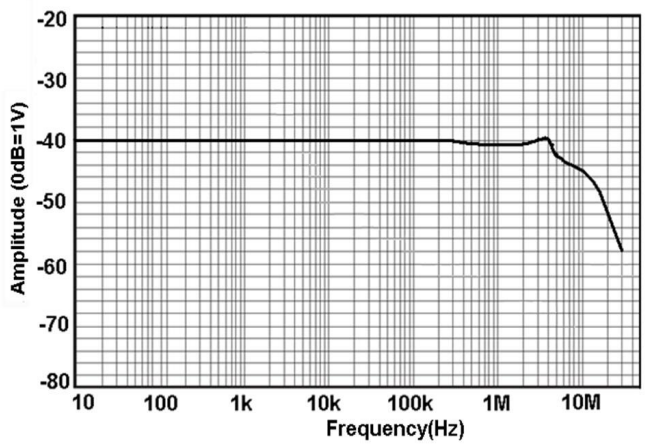
T3CP150-12 Continuous Maximum Current Input



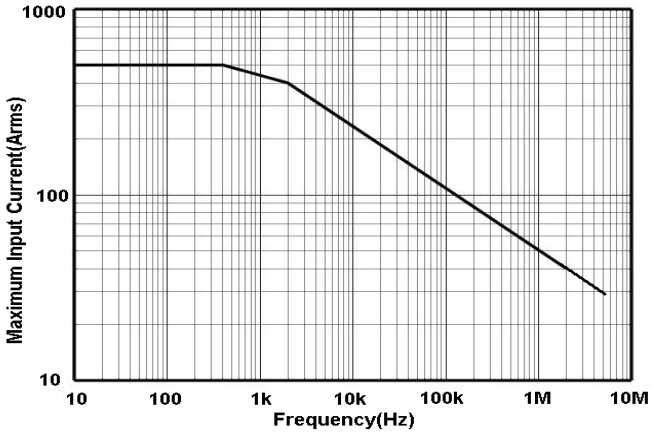
T3CP150-12 Insertion Impedance



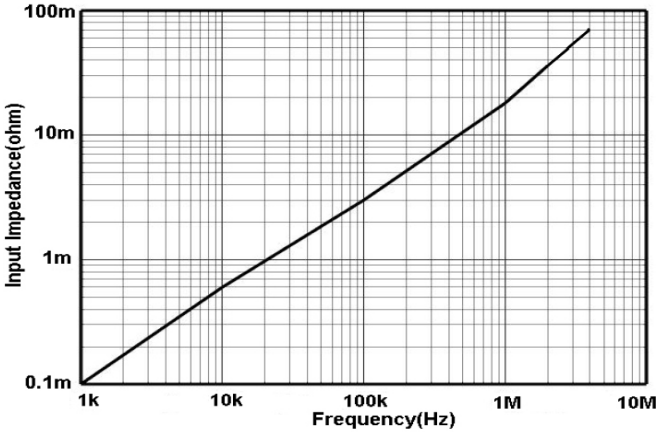
T3CP500-5 Frequency Response



T3CP500-5 Continuous Maximum Current Input



T3CP500-5 Insertion Impedance



Insertion Impedance: Insertion Impedance (for all current probes) is the impedance added into the cable / DUT being tested, by the presence of the current probe measurement jaw. The insertion impedance is typically < 1 milliohm at low frequencies up to usually not much more than 1 ohm at high frequencies. See the insertion impedance tables for details of insertion impedance for each probe.

Certifications

Teledyne LeCroy certifies compliance to the following standards as of the date of publication. As standards evolve, these may no longer be current. See the Declaration of Conformity shipped with your product for current certifications.

EMC Compliance

EC Declaration of Conformity - EMC

The current probes meet the intent of EC Directive 2014/30/EU for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1:2013 EMC requirements for electrical equipment for measurement, control, and laboratory use.[1]

ELECTROMAGNETIC EMISSIONS:

EN 55011/A1:2010 Radiated and Conducted Emissions Group 1 Class A [2, 3]

ELECTROMAGNETIC IMMUNITY:

EN 61000-4-2:2009 Electrostatic Discharge, 4 kV contact, 8 kV air, 4 kV vertical/horizontal coupling planes [4]

EN 61000-4-3/A2:2010 RF Radiated Electromagnetic Field, 3 V/m, 80-1000 MHz; 3 V/m, 1400 MHz - 2 GHz; 1 V/m, 2 GHz - 2.7 GHz

EN 61000-4-8:2010 Power Frequency Magnetic Field, 3 A/m, 50 Hz; 3 A/m, 60 Hz

1 To ensure compliance with the applicable EMC standards, use high quality shielded interface cables.

2 This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

3 Emissions which exceed the levels required by this standard may occur when the probe is connected to a test object.

4 Meets Performance Criteria “B” limits of the respective standard: during the disturbance, product undergoes a temporary degradation or loss of function or performance which is self-recoverable.

EUROPEAN CONTACT:*

Teledyne GmbH – LeCroy Division

Im Breitspiel 11c

D-69126 Heidelberg

Germany

Tel: (49) 6221 82700

Australia & New Zealand Declaration of Conformity - EMC

The probe complies with the EMC provision of the Radio Communications Act per the following standards, in accordance with requirements imposed by the Australian Communication and Media Authority (ACMA):

AS/NZS CISPR 11:2009/A1:2010, EN 55011:2009/A1:2010 Radiated and Conducted Emissions, Group 1, Class A.

AUSTRALIA / NEW ZEALAND CONTACTS:*

RS Components Pty Ltd.

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Kent Town, South Australia 5067

RS Components Ltd.

Unit 30 & 31 Warehouse World

761 Great South Road

Penrose, Auckland, New Zealand

* Visit teledynelecroy.com/support/contact for the latest contact information.

Safety Compliance

EC Declaration of Conformity – Low Voltage

The probe meets the intent of EC Directive 2014/35/EU for Product Safety.

Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

IEC/EN 61010-1:2010 + A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements

IEC/EN 61010-2-032:2019 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 2-032: Particular Requirements for Hand-Held and Hand Manipulated Current Sensors for Electrical Test and Measurement.

Environmental Compliance

End-Of-Life Handling

The probe is marked with this symbol to indicate that it complies with the applicable European Union requirements to Directives 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE).

The probe is subject to disposal and recycling regulations that vary by country and region. Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles. For more information about proper disposal and recycling of your Teledyne LeCroy product, visit teledynelecroy.com/recycle.

Restriction of Hazardous Substances (RoHS)

The product and its accessories conform to the 2011/65/EU RoHS2 Directive inclusive of any further amendments or modifications of said Directive.

See package inserts for other environmental certifications.

CHINA RoHS 2

Unless otherwise specified, all the materials and processes are compliant with the latest requirements of China RoHS 2. The hazardous substances contained in the instrument are disclosed in accordance with the standards SJ/T 11364-2014 (Marking for the restricted use of hazardous substances in electronic and electrical products) and GB/T 26572-2011 (Requirements on concentration limits for certain restricted substances in electrical and electronic products). The instrument is marked with an appropriate Environmental Friendly Use Period (EFUP) symbol. The packaging materials include the appropriate recycling labels. The below substance disclosure tables (in Chinese and English languages) provide the required compliance information.

部件名称	有毒有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCBAs	X	O	O	O	O	O
机械硬件	O	O	O	O	O	O
金属片	O	O	O	O	O	O
塑料部件	O	O	O	O	O	O
电缆组件	X	O	O	O	O	O
显示器	O	O	O	O	O	O
电源	O	O	O	O	O	O
风扇	O	O	O	O	O	O
电池	O	O	O	O	O	O
电源线	O	O	O	O	O	O
外部电源(如有)	X	O	O	O	O	O
探头(如有)	X	O	O	O	O	O
熔丝(如有)	O	O	O	O	O	O
产品外壳(如有)	O	O	O	O	O	O
适配器/模块(如有)	O	O	O	O	O	O
鼠标(如有)	O	O	O	O	O	O
O: 表明该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11364-2014标准规定的限量要求之下。						
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11364-2014标准规定的限量要求。						

EFUP (对环境友好的使用时间): 30年。

使用条件：参阅用户手册“环境条件”部分的规定。

探头EFUP: 10年。

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr6+)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCBAs	X	O	O	O	O	O
Mechanical Hardware	O	O	O	O	O	O
Sheet Metal	O	O	O	O	O	O
Plastic Parts	O	O	O	O	O	O
Cable Assemblies	X	O	O	O	O	O
Display	O	O	O	O	O	O
Power Supply	O	O	O	O	O	O
Fans	O	O	O	O	O	O
Batteries	O	O	O	O	O	O
Power Cord	O	O	O	O	O	O
Ext Power Supply (if present)	X	O	O	O	O	O
Probes (if present)	X	O	O	O	O	O
Fuse (if present)	O	O	O	O	O	O
Product Case (if present)	O	O	O	O	O	O
Adapters/Modules (if present)	O	O	O	O	O	O
Mouse (if present)	O	O	O	O	O	O
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement specified in SJ/T11364-2014.						
X: Indicates that this toxic or hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement specified in SJ/T11364-2014.						

EFUP (Environmental Friendly Use Period): 30 years.

Use Conditions: Refer to the environmental conditions stated in the User Manual.

EFUP for Probes: 10 years.

Warranty

Teledyne LeCroy warrants this oscilloscope accessory for normal use and operation within specification for a period of one year from the date of shipment. Spare parts, replacement parts and repairs are warranted for 90 days. In exercising its warranty, Teledyne LeCroy, at its option, will either repair or replace any assembly returned within its warranty period to the Customer Service Department or an authorized service center. However, this will be done only if the product is determined by Teledyne LeCroy's examination to be defective due to workmanship or materials, and the defect is not caused by misuse, neglect, accident, abnormal conditions of operation, or damage resulting from attempted repair or modifications by a non-authorized service facility.

The customer will be responsible for the transportation and insurance charges for the return of products to the service facility. Teledyne LeCroy will return all products under warranty with transportation charges prepaid.

This warranty replaces all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness or adequacy for any particular purposes or use. Teledyne LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise.

ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
Everywhereyoulook™

Company Profile

Teledyne LeCroy is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types. Since our founding in 1964, we have focused on creating products that improve productivity by helping engineers resolve design issues faster and more effectively. Oscilloscopes are tools used by designers and engineers to measure and analyze complex electronic signals in order to develop high-performance systems and to validate electronic designs in order to improve time to market.

The Teledyne Test Tools brand extends the Teledyne LeCroy product portfolio with a comprehensive range of test equipment solutions. This new range of products delivers a broad range of quality test solutions that enable engineers to rapidly validate product and design and reduce time-to-market. Designers, engineers and educators rely on Teledyne Test Tools solutions to meet their most challenging needs for testing, education and electronics validation.

Location and Facilities

Headquartered in Chestnut Ridge, New York, Teledyne Test Tools and Teledyne LeCroy has sales, service and development subsidiaries in the US and throughout Europe and Asia. Teledyne Test Tools and Teledyne LeCroy products are employed across a wide variety of industries, including semiconductor, computer, consumer electronics, education, military/aerospace, automotive/industrial, and telecommunications.

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T3 stands for Teledyne Test Tools.

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