

Product Introduction

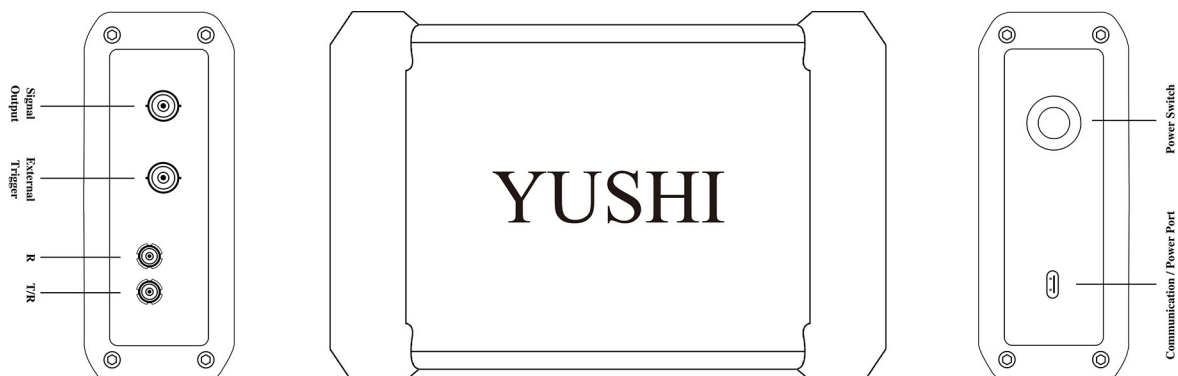
The PR20, developed and manufactured by Shenyang Yushi Instruments, is a high-performance computer-controlled ultrasonic pulse generator and receiver. The instrument is connected to a computer and an oscilloscope for use, assisting in ultrasonic flaw detection, thickness measurement, and probe testing, etc. It has a wide range of applications in non-destructive testing (NDT) and material analysis.

The pulse generator and receiver include a Windows-based control software, allowing users to select trigger sources, transmit voltage, repetition frequency, and pulse width. Additionally, it enables switching between single/dual-crystal modes, adjusting damping and gain to meet different user requirements. The open SDK software package also allows users to develop custom applications on various mainstream Windows systems.



Advantages and Characteristics

- Damping Control: Multiple levels adjustable
- Support Transmit-Receive (TR) mode and Pulse-Echo mode
- Repetition Frequency Internal Trigger: 8 levels adjustable (4Hz-2KHz)
- Pulse Width: Adjustable from 1~40 times (one times is approximately 28ns)
- Transmitting Voltage: 8 levels adjustable, up to 400V maximum
- Maximum Bandwidth: 20MHz
- 60dB Receiving Gain Range



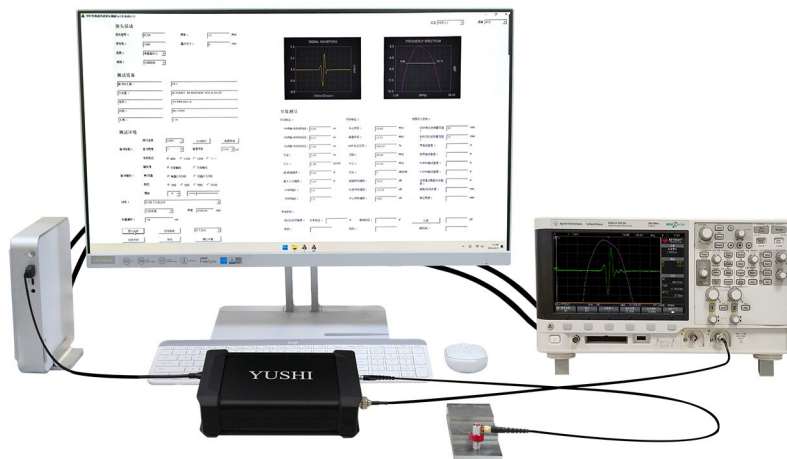
Windows-Based Control Software

The ultrasonic pulse generator and receiver control software requires no additional installation or configuration steps. Users can directly run the executable file without worrying about a complex installation process.

With a simple and user-friendly interface, users can select and configure parameters as needed. Additionally, they can save the current parameter configuration to a file for future use, enabling quick synchronization of previous settings.

Building an ideal test platform

The Ultrasonic Pulse Generator Receiver is connected to a computer and an oscilloscope. Using the instrument's built-in control software, it can perform tasks such as ultrasonic flaw detection, material thickness measurement, transducer performance analysis, and material property analysis, etc. Additionally, when used in conjunction with dedicated ultrasonic transducer testing software, it can be configured into an ultrasonic transducer testing system.



Application of Testing Platforms in the Field of Non-Destructive Testing (NDT)

Probe Performance Testing

In the ultrasonic testing process, the probe plays a vital role, as its performance directly affects the accuracy and reliability of flaw detection results. The testing platform can measure and analyze the probe's secho signals in both the time domain and the frequency domain under working conditions.

Material Analysis

Utilizing the ultrasonic pulse-echo reflection principle, material analysis evaluates the mechanical properties and quality of materials by measuring the propagation speed of ultrasonic waves within them. This method is widely applied in material engineering, particularly in material evaluation and quality control.

Ultrasonic Flaw Detection and Thickness Measurement

Utilizing the ultrasonic pulse-echo reflection principle, waveform measurement and analysis are performed. Flaw detection determines the presence, size, and location of defects, while thickness measurement calculates the workpiece thickness based on the known sound velocity of the material and the time interval between two echo signals.



Control Parameters

	Control Parameters	Range	Stepping
Transmitting Area	Transmitting Voltage	60V、110V、150V、200V、250V、300V、350V、400V	Chose
	Pulse Width	1~40 (one time is approximately 28ns)	One Time
	Repetition Rate(Internal Trigger)	4Hz、8Hz、16Hz、20Hz、100Hz、500Hz、1KHz、2KHz	Chose
	Trigger Source	Internal Trigger, External Trigger	Chose
Receiving area	Single/ Dual Crystal	Single Crystal (1T/1R) ,Dual Crystal (1T/2R)	Chose
	Damping	34Ω、50Ω、90Ω、510Ω	Chose
	Gain	0~60dB	1dB

Technical Specifications

Pulse Type	Negative Square Wave Pulse
Rise Time	Generally between 2.0-7.5ns, the damping will reach 20ns when it is 510Ω
Fall Time	Generally about 2.8ns
Pulse Width	One time pulse width is approximately 28ns
Band Width	0.5-20MHz
Excitation Mode	Pulse-Echo (P-E), Penetration (T-T)
Repetition Frequency	Internal Trigger: 4Hz-2KHz; External Trigger: 0-20KHz
External Trigger	Rising Edge Trigger; Trigger Voltage: 3.3V

Host Specifications

Outline Size	18.4cm*12.6cm*5cm	Operating Temperature	0-55℃
Weight	542g		

Standard Configuration

Host Machine PR20	1	Connecting Cable BNC to BNC	2
Communication USB	1	USB Type-C data cable	1
Control Software (Stored in USB Flash Drive)	1		