SONEMAT

Advanced EMAT Pulser-Receiver PR5020

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Product Features

- No couplants or surface preparation
- Pulse-echo pulser-receiver with a broadband pulser with additional low-noise amplifier and averaging
- Can be stripped to bare boards for integration with robotic systems or scanning systems (compact)
- Compatible with Sonemat's bulk wave probe range

The PR5020 Advanced EMAT Pulser-Receiver is designed to drive a broadband voltage pulse into suitable Electromagnetic Acoustic Transducers (EMATs) and detect and amplify returned signals. Compatible with a wide variety of bulk-wave EMATs and virtually any oscilloscope or high-speed analogue-digital converter. Similar to Sonemat's PR5000 but with additional amplification and averaging circuits which improves the signal; this is ideal for challenging applications, such as through thick attenuative samples or if a large lift-off is required. However the drawback is the initial dead-time is longer and the baseline noise is higher.

It can be used in industrial environments, but also teaching and/or research use in the laboratory. The PR500 is also sold as a custom version with bare boards (compact) for integration into robotic or scanning systems.

Applications

Energy Generation | Nuclear | Tanks and vessels | Pipelines | Oil and Gas

The PR5020 is suitable for a range of industrial applications, in non-destructive testing (NDT) in sectors such as energy generation, petrochemical and oil & gas. Its broadband frequency response and adaptability make it perfect for material characterization, flaw detection, and thickness measurement.

- Thickness gauging (± 0.1mm)
- Corrosion monitoring
- Acoustic birefringence
- Crystallographic texture
- Boiler tube inspection
- Defect detection

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MADE IN BRITAIN

Specifications

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Feature	Description
Driving Pulse	Broadband spike pulse around 400V, 100 ns pulse with @ 1kHz
Bandwidth	Broadband response with centre frequency around 3-5MHz; full bandwidth 500kHz - 15MHz
Amplifier	+80dB, additional +20dB from advanced circuit
Pulse Repetition Rate	Controlled by dial, 1 - 1kHz
Dimensions	185 x 190 x 70mm (L x W x D) approx.
Weight	1.4kg
Trigger	External or Internal Trigger
Storage Temp.	-10°C TO +60°C
Operating Temp.	0°C TO +40°C
Mains Power Option	220-250V, 50Hz AC - UK/Europe/China Mains power supply
Battery Power Option	Li-ion battery pack (14.8V, 2.6Ah, 38.48 Wh), or 8 x AA batteries
Li-ion Battery Lifetime	10+ hours of continuous use
Li-ion Battery Charge Time	1 - 1.5 hrs from empty to fully charged
Connections	5 x BNC connectors

The PR5020 can be mains power only, or battery powered via either AA batteries or a Li-ion battery pack. If the Li-ion battery pack is chosen by the customer, the PR5020 can run off mains power even if the batteries are flat if left plugged in - this is not an option if AA batteries are chosen, they must be replaced. The PR500 will send a broadband voltage spike to the EMAT, and return any signal received by the EMAT to the oscilloscope. The Internal/External trigger switch can be used to select between continuous pulse generation (at the rate specified by the dial) and pulse generation in response to an external trigger, which should be negative going -3 V.

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