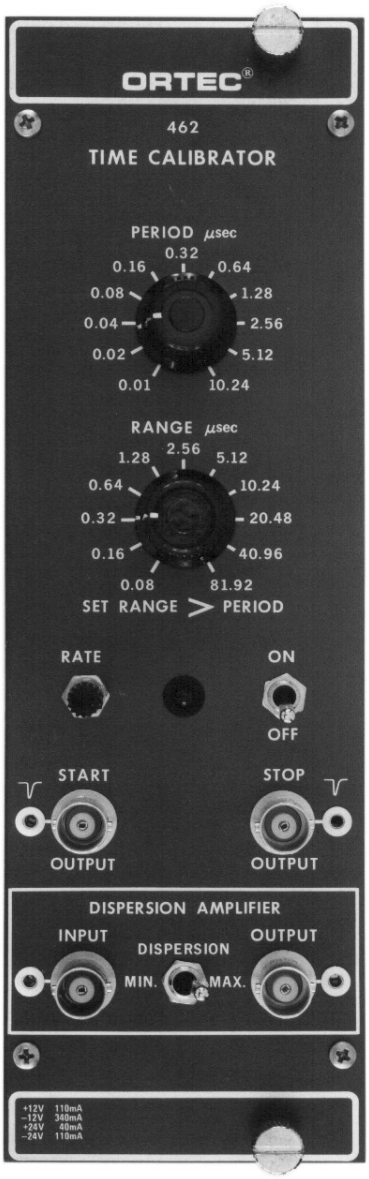
ORTEC®

AMETEK®

462
Time Calibrator

- **Provides fast, easy calibration of time-to-amplitude converters**
- **Absolute accuracy ±10 ps for a 10-ns period**
- **Long-term stability, 100 ppm/year**
- **Calibrates time periods from 10 ns to 10 µs on 80 ns to 80 µs ranges**



Fast, easy calibration of timing equipment such as time-to-amplitude converters is a routine operation with the ORTEC Model 462 Time Calibrator. The start and stop pulses from the Model 462 are separated by an integral multiple of a precise time period that can be selected by the operator. The accuracy of this time period is ±10 ps for a 10-ns period and is ±0.005% of the total period for longer periods. The long-term stability of this signal is better than 100 ppm.

Operation of the Model 462 Time Calibrator is simplified by controls that enable the operator to set the time period from 10 ns to 10.24 µs in 11 binary steps, with the range in time over which these intervals occur selectable from 80 ns to 81.92 µs in the same number of steps. The average repetition rate of the output pulses can be controlled to enable slower or faster count rates to match the user's experiment, and an external gate input allows remote or automatic control of the output.

A Dispersion Amplifier on the Model 462 front panel can mix semi-Gaussian noise with the output of the time-to-amplitude converter. Use of this circuit spreads each peak in the time spectrum to identify the exact centroid of each peak. This peak dispersion noise can be switched into or out of the circuit without any cable reconnections.

The Model 462 is a double-width NIM module and all signal levels from it are standard, making it compatible with any NIM modular instrumentation system.

Specifications

PERFORMANCE

CALIBRATION PERIOD ACCURACY The absolute accuracy is ±10 ps for 10 ns period and ±0.005% of total period for all other selections; factory-calibrated against National Bureau of Standards WWV.

CALIBRATION PERIOD INSTABILITY Within <±10 ppm/°C of selected period; 100 ppm/year.

CONTROLS

PERIOD µsec 11-position switch selects the basic interval steps between Start and Stop Outputs; selections are 10, 20, 40, 80, 160, 320, and 640 ns and 1.28, 2.56, 5.12, and 10.24 µs.

RANGE µsec 11-position switch selects the total calibration time scale in binary multiples of 80 ns; selections are 80, 160, 320, and 640 ns and 1.28, 2.56, 5.12, 10.24, 20.48, 40.96, and 81.92 µs.

RATE Single-turn, front-panel trim potentiometer adjusts the random Start-Stop rate from about 100 to 50,000 counts/s.

ON/OFF Toggle switch disables the Model 462 output for the Off position or enables the output (except when gated off) for the On position; the adjacent lamp lights when the output is enabled.

DISPERSION Toggle switch marked Min and Max selects the internal circuit effect between the Input and Output of the Dispersion Amplifier. The Min position selects a reproduction of the Input with a gain of 1 at the Output. The Max position provides for the addition of semi-Gaussian noise to the Input before it is furnished through the Output; the purpose is to reduce the resolution of the spectrum in order to calculate the peak centroid within a fraction of one channel.

INPUTS

EXTERNAL ENABLE INPUT Rear-panel BNC connector accepts gating logic to control unit when On/Off switch is set at On; >2 V or open enables; nominal ground disables.

DISPERSION AMPLIFIER INPUT Front-panel BNC connector accepts ±10 V linear signals, typically from a time-to-amplitude converter; Z_{in} ~2 kΩ.

OUTPUTS

START OUTPUT Front-panel BNC connector furnishes a NIM-standard fast negative logic pulse, which occurs at a random time with respect to the preceding start pulse; Z_o ~1 kΩ.

STOP OUTPUT Front-panel BNC connector furnishes a NIM-standard fast negative logic pulse, which occurs at an integral multiple (≥2) of the selected period following each Start output pulse; Z_o = 1 kΩ.

BUSY OUTPUT Rear-panel BNC connector furnishes a signal that is at –0.8 V for a 50-Ω load during the interval from each start pulse until its subsequent stop pulse; Z_o = 1 kΩ.

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PERIOD OUTPUT Rear-panel BNC connector furnishes a NIM-standard fast negative pulse at a fixed rate of 1/period; can be used to check calibration or as a stable external time base; Z_o = 1 kΩ.

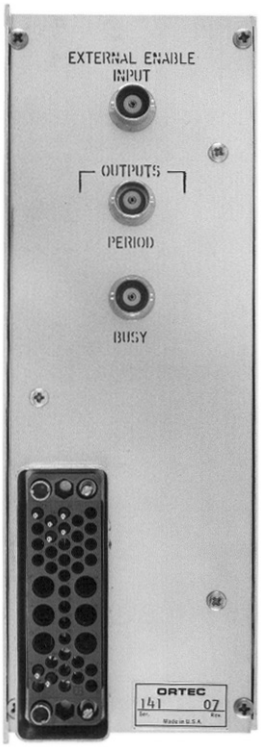
DISPERSION AMPLIFIER OUTPUT Front-panel BNC connector provides ±10 V linear output, same polarity as the Dispersion Amplifier Input; Dispersion switch selects whether signal is an exact reproduction of the input or has ~100 mV FWHM random noise mixed with it; Z_o <1 Ω.

ELECTRICAL AND MECHANICAL

POWER REQUIRED +12 V, 110 mA; –12 V, 340 mA; +24 V, 40 mA; –24 V, 110 mA.

WEIGHT
Net 1.5 kg (3.5 lb).
Shipping 2.9 kg (6.5 lb).

DIMENSIONS NIM-standard double-width module 6.90 X 22.13 cm (2.70 X 8.714 in.) per DOE/ER-0457T.



Ordering Information

Model	Description
462	Time Calibrator

ORTEC®
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Specifications subject to change
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