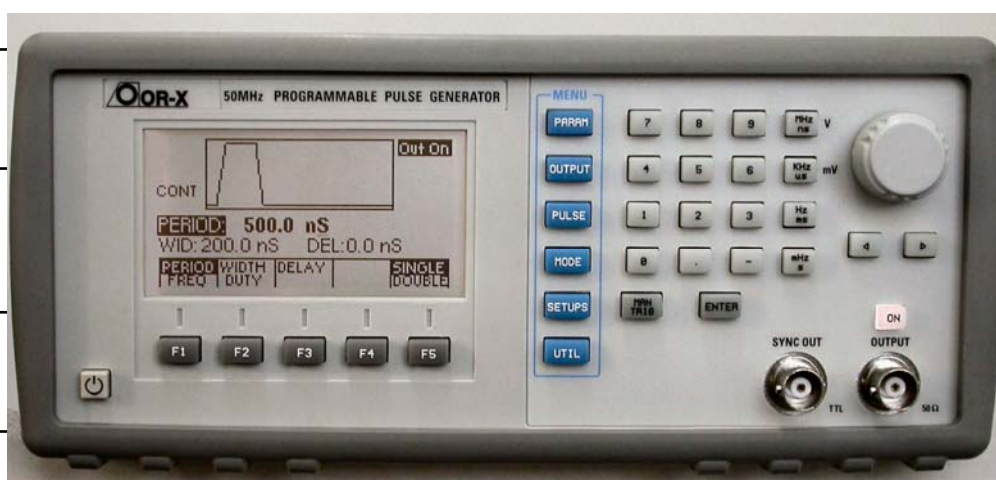


# MODEL ORX-555

## PROGRAMMABLE PULSE GENERATOR

- \* **50MHz Frequency Range with 10Vp-p into 50Ω Output**
- \* **Variable Width and Delay with Variable Transitions**
- \* **IEEE488.2 and RS-232C, SCPI compatible**



### Exceptional Versatility, Performance and Precision

#### High Performance Pulses

The **Model 555** features variable pulse widths from 10 ns to 10 s, delays from 0 ns to 10 s with up to 6 digits resolution and adjustable output levels from -10V to +10V, with pulse amplitudes from 0.1V to 10Vp-p into 50 ohms load.

The Pulse Generator also features selectable complementary pulse and double pulse, in continuous, triggered, gated and counted burst modes.

The **Model 555** allows selection of predefined amplitude and offset for critical stimulus and testing of major semiconductor technologies as TTL, CMOS and ECL.

#### Variable Transitions

To make operation flexible, variable transitions (rise and fall times) can be programmed from 5 ns to 100 ms. With the flexible transition times, various shapes of pulses can be obtained for

applications where parameters such as linearity, switching times or reflection times must be analyzed.

Operational amplifiers slew rate can be measured or thresholds of devices and circuits can be easily tested using programmable rise and fall times.

#### Fast and Easy Operation

To make operation easy, **Model 555** interface with the operator in a straightforward manner by which the front panel display always shows the parameter being varied and its value. If a new parameter just entered is not compatible with the existing setup status, the operator is informed by an error message. Test setups, up to 99 locations, can be stored and recalled. This feature allows simple test sequence development as well as no need for a controller in repetitive tests, with reduced bus traffic in

ATE applications. Last user setup is also retained at power down.

#### Internal Calibration

The Pulse Generator **Model 555** is self-calibrating itself by means of internal time and voltage reference.

With no need to open the case, the Pulse Generator benefits of improved accuracy, extended calibration interval and low downtime.

#### GPIB Programming

The **Model 555** has been designed for use in ATE systems. All parameters, modes and functions are programmable and fully compatible with IEEE-488.2 and the Standard Commands for Programmable Instruments (SCPI).

# MODEL 555 - SPECIFICATIONS

## PULSE FUNCTIONS

**Single** - One pulse at each selected period up to 50MHz repetition rate.

**Double** - One pair of pulses at each period up to 25MHz repetition rate. Both pulses have the same selected width; the position of the second pulse set by the delay control.

## OPERATING MODES

**Continuous** - Output continuous at programmed period rate.

**Triggered** - Output quiescent until triggered by an internal, external, GPIB or manual trigger, then generates one cycle at programmed period rate.

**Gated** - Same as triggered mode except pulses are output for the duration of the gated signal. The last cycle started is completed.

**Burst** - Same as triggered mode for programmed number of cycles from 2 to 999,999 as set by the N-BURST function.

**External Width** - Trigger duration and rate sets pulse width and repetition.

## TIMING CHARACTERISTICS

### PERIOD

**Range:** 20 ns to 10 s  
(50MHz to 0.1Hz repetition rate).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.01\%$  of setting.

**Jitter:**  $< 0.01\%$  of setting +20 ps for Period, Width and Delay parameters.

### WIDTH

**Range:** 10 ns to (Period - 10 ns off time).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.5\%$  of setting  $\pm 500$  ps.  
Double Pulse Width Accuracy:  $\pm 0.5\%$   $\pm 3$  ns ( for the second pulse only).

### DELAY

**Range:** 0 ns to (Period - Width -10 ns off time).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.5\%$  of setting  $\pm 500$  ps.

### DUTY CYCLE

**Range:** 1 to 99%.

**Resolution:** 3 digits (0.1%).

**Accuracy:** Limited by width and pulse accuracy.

## OUTPUT CHARACTERISTICS

### AMPLITUDE

**High Level Range:** -9.90V to +10V into 50  $\Omega$  (-19.80V to +20V in open circuit).

**Low Level Range:** -10V to +9.90V into 50  $\Omega$  (-20V to +19.80V in open circuit).

**Amplitude Range:** 0.1V to 10V p-p into 50  $\Omega$  load (20V p-p max in open circuit).

**Resolution:** 3 digits limited to 10mV.

**Amplitude Accuracy:**  $\pm 1\%$  of setting  $\pm 10$ mV into 50  $\Omega$  load.

**Offset Accuracy:**  $\pm 1\% \pm 25$  mV.

**Aberrations:**  $< 5\% + 20$ mV into 50  $\Omega$  load, for pulse levels between  $\pm 5$ V.

**Output Resistance:** 50  $\Omega$ .

### TRANSITION TIMES

**Range:**  $< 5$  ns to 100 ms variable. Leading and trailing edges settable separately and limited to 20:1 ratio between settings into one of the following ranges:  
5ns-100ns; 50ns-1.0us; 500ns-10us;  
5.0us-100us; 50us-1.0ms; 500us-10ms,  
5ms-100ms,

**Resolution:** 3 digits, limited to 10 ps.

**Accuracy:**  $\pm 5\%$  of setting  $\pm 2$  ns.

**Linearity:**  $< 5\%$  deviation from a straight line between 10% and 90% points, for transitions  $> 50$  ns.

### INTERNAL TRIGGER

**Range:** 100 ns to 100 s.

**Resolution:** 4 digits limited to 100 ns.

**Accuracy:** 0.01%.

## INPUTS AND OUTPUTS

### TRIGGER INPUT

**Sensitivity:** 200 mVp-p minimum.

**Minimum Width:** 10ns.

**Maximum Rate:** 50MHz.

**Input Impedance:** 10 K $\Omega$ .

**Input Protection:**  $\pm 15$ V DC plus peak AC.

**Range:** Selectable from -10V to +10V.

**Resolution:** 3 digits limited to 10mV.

**Slope Selection:** Positive or Negative.

### SYNC OUTPUT

A TTL level pulse at programmed period. Output impedance is 50  $\Omega$ .

The high level is  $> 2$ V into 50  $\Omega$  and with 3.5 ns typical transition.

## GPIB PROGRAMMING

**Internal:** IEEE-488.2 and SCPI compatible. RS-232 selectable

**Address:** 0-30 front panel selected.

## GENERAL

**Memory:** Non-volatile stores up to 99 complete panel settings. Last user setup also retained at power down.

**Power Requirements:** 100-240V,  $\pm 10\%$ , 50 VA max.

**Dimensions:** Height: 88 mm (3.5 in)

Width: 213 mm (8.4in)

Length: 300 mm (12 in)

Weight: 3 Kg net.

**Humidity:** to 95% RH, 0  $^{\circ}$ C to 30  $^{\circ}$ C

**EMC:** EN55011, EN55082.

**Safety:** EN61010.

## CE Labeled

## NOTES

The specifications describe the instrument performance after 20 minutes warm-up period into a 50 ohms load . All timing characteristics measured at 50% of amplitude with fastest edges.

Specifications are verified according to the performance check procedures in the technical manual. Specifications not verified in the manual are either explanatory notes or general performance characteristics only.

Feb 08



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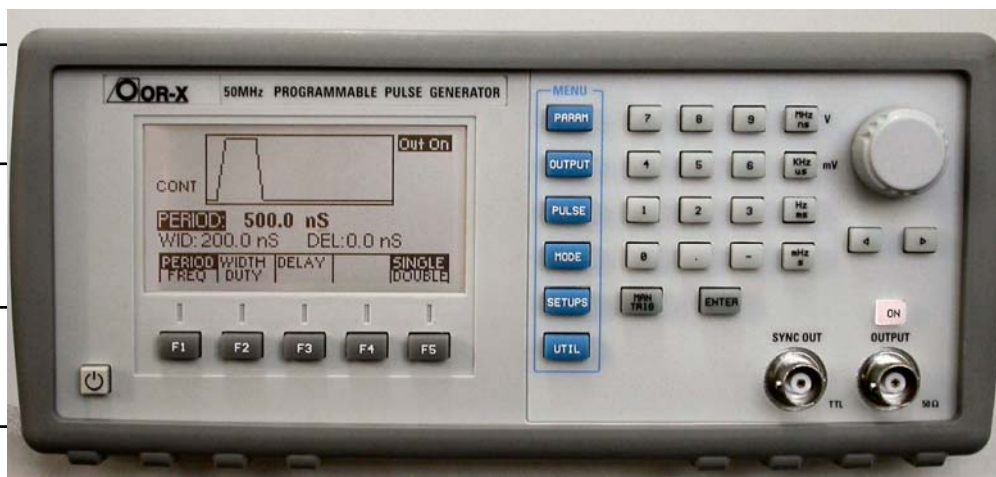
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# MODEL ORX-556

## DUAL CHANNEL

## PROGRAMMABLE PULSE GENERATOR

- \* **50MHz Frequency Range with 10Vp-p into 50Ω Output**
- \* **Variable Width and Delay with Variable Transitions**
- \* **IEEE488.2 and RS-232C, SCPI compatible**



### Exceptional Versatility, Performance and Precision

#### High Performance Pulses

The **Model 556** features variable pulse widths from 10 ns to 10 s, delays from 0 ns to 10 s with up to 6 digits resolution and adjustable output levels from -10V to +10V, with pulse amplitudes from 0.1V to 10Vp-p into 50 ohms load.

Each channel can be operated independently or coupled as a dual channel unit. The Pulse Generator also features selectable complementary pulse and double pulse, in continuous, triggered, gated and counted burst modes. The **Model 556** allows selection of predefined amplitude and offset for critical stimulus and testing of major semiconductor technologies as TTL, CMOS and ECL.

#### Variable Transitions

To make operation flexible, variable transitions (rise and fall times) can be programmed from 5 ns to 100 ms. With the flexible transition times, various

shapes of pulses can be obtained for applications where parameters such as linearity, switching times or reflection times must be analyzed.

Operational amplifiers slew rate can be measured or thresholds of devices and circuits can be easily tested using programmable rise and fall times.

#### Fast and Easy Operation

To make operation easy, **Model 556** interface with the operator in a straightforward manner by which the front panel display always shows the parameter being varied and its value. If a new parameter just entered is not compatible with the existing setup status, the operator is informed by an error message. Test setups, up to 99 locations, can be stored and recalled. This feature allows simple test sequence development as well as no need for a controller in

repetitive tests, with reduced bus traffic in ATE applications. Last user setup is also retained at power down.

#### Internal Calibration

The Pulse Generator **Model 556** is self-calibrating itself by means of internal time and voltage reference.

With no need to open the case, the Pulse Generator benefits of improved accuracy, extended calibration interval and low downtime.

#### GPIB Programming

The **Model 556** has been designed for use in ATE systems. All parameters, modes and functions are programmable and fully compatible with IEEE-488.2 and the Standard Commands for Programmable Instruments (SCPI).

# MODEL 556 - SPECIFICATIONS

## PULSE FUNCTIONS

**Single** - One pulse at each selected period up to 50MHz repetition rate.

**Double** - One pair of pulses at each period up to 25MHz repetition rate. Both pulses have the same selected width; the position of the second pulse set by the delay control.

## OPERATING MODES

Each channel can be operated independently or coupled. Both channels have same specifications and capabilities.

**Continuous** - Output continuous at programmed period rate.

**Triggered** - Output quiescent until triggered by an internal, external, GPIB or manual trigger, then generates one cycle at programmed period rate.

**Gated** - Same as triggered mode except pulses are output for the duration of the gated signal. The last cycle started is completed.

**Burst** - Same as triggered mode for programmed number of cycles from 2 to 999,999 as set by the N-BURST function.

**External Width** - Trigger duration and rate sets pulse width and repetition.

## TIMING CHARACTERISTICS

### PERIOD

**Range:** 20 ns to 10 s  
(50MHz to 0.1Hz repetition rate).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.01\%$  of setting.

**Jitter:**  $< 0.01\%$  of setting +20 ps for Period, Width and Delay parameters.

### WIDTH

**Range:** 10 ns to (Period - 10 ns off time).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.5\%$  of setting  $\pm 500$  ps.  
Double Pulse Width Accuracy:  $\pm 0.5\%$   $\pm 3$  ns ( for the second pulse only).

## DELAY

**Range:** 0 ns to (Period - Width -10 ns off time).

**Resolution:** Up to 6 digits, limited to 100 ps.

**Accuracy:**  $\pm 0.5\%$  of setting  $\pm 500$  ps.

## DUTY CYCLE

**Range:** 1 to 99%.

**Resolution:** 3 digits (0.1%).

**Accuracy:** Limited by width and pulse accuracy.

## OUTPUT CHARACTERISTICS

### AMPLITUDE

**High Level Range:** -9.90V to +10V into 50  $\Omega$  (-19.80V to +20V in open circuit).

**Low Level Range:** -10V to +9.90V into 50  $\Omega$  (-20V to +19.80V in open circuit).

**Amplitude Range:** 0.1V to 10V p-p into 50  $\Omega$  load (20V p-p max in open circuit).

**Resolution:** 3 digits limited to 10mV.

**Amplitude Accuracy:**  $\pm 1\%$  of setting  $\pm 10$ mV into 50  $\Omega$  load.

**Offset Accuracy:**  $\pm 1\% \pm 25$  mV.

**Aberrations:**  $< 5\% + 20$ mV into 50  $\Omega$  load, for pulse levels between  $\pm 5$ V.

**Output Resistance:** 50  $\Omega$ .

### TRANSITION TIMES

**Range:**  $< 5$  ns to 100 ms variable.

Leading and trailing edges settable separately and limited to 20:1 ratio between settings into one of the following ranges:

5ns-100ns; 50ns-1.0us; 500ns-10us;  
5.0us-100us; 50us-1.0ms; 500us-10ms,  
5ms-100ms,

**Resolution:** 3 digits, limited to 10 ps.

**Accuracy:**  $\pm 5\%$  of setting  $\pm 2$  ns.

**Linearity:**  $< 5\%$  deviation from a straight line between 10% and 90% points, for transitions  $> 50$  ns.

## INTERNAL TRIGGER

**Range:** 100 ns to 100 s.

**Resolution:** 4 digits limited to 100 ns.

**Accuracy:** 0.01%.

## INPUTS AND OUTPUTS

### TRIGGER INPUT

**Sensitivity:** 200 mVp-p minimum.

**Minimum Width:** 10ns.

**Maximum Rate:** 50MHz.

**Input Impedance:** 10 K $\Omega$ .

**Input Protection:**  $\pm 15$ V DC plus peak AC.

**Range:** Selectable from -10V to +10V.

**Resolution:** 3 digits limited to 10mV.

**Slope Selection:** Positive or Negative.

### SYNC OUTPUT

A TTL level pulse at programmed

period. Output impedance is 50  $\Omega$ .

The high level is  $> 2$ V into 50  $\Omega$  and with 3.5 ns typical transition.

## GPIB PROGRAMMING

**Internal:** IEEE-488.2 and SCPI

compatible. RS-232 selectable

**Address:** 0-30 front panel selected.

## GENERAL

**Memory:** Non-volatile stores up to 99 complete panel settings. Last user setup also retained at power down.

**Power Requirements:** 100-240V,  $\pm 10\%$ , 50 VA max.

**Dimensions:** Height: 88 mm (3.5 in)

Width: 213 mm (8.4in)

Length: 300 mm (12 in)

Weight: 3 Kg net.

**Humidity:** to 95% RH, 0  $^{\circ}$ C to 30  $^{\circ}$ C

**EMC:** EN55011, EN55082.

**Safety:** EN61010.

## CE Labeled

## NOTES

The specifications describe the instrument performance after 20 minutes warm-up period into a 50 ohms load . All timing characteristics measured at 50% of amplitude with fastest edges.

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