

PM 5712

PM 5715

### PM 5712 & PM 5715 50 MHz Pulse Generators

Frequency range: 1 Hz to 50 MHz

Rise and fall times: PM 5712, 4 ns fixed; PM 5715, 6 ns to 500 ms, variable

Amplitude range: 0.2V to 10V

DC offset: +2.5V

Facilities for: manual and external triggering, gating, and pulse shaping

Pulse modes: single/double, normal/inverted, positive/negative

#### Applications

The universal 50 MHz pulse generators PM 5712 and PM 5715 have been designed for medium fast, pulse response testing applications.

They can handle virtually any analog or digital circuit testing requirement up to 50 MHz. Their speed and the wide 0.2V to 10V output voltage range makes these generators ideal for testing of all MOS- and TTL-compatible circuits.

A second output (auxiliary output) supplies pulses, similar to the main output pulses, yet with fixed TTL-compatible levels.

The capability of producing double pulses, with variable delay, allow these instruments to be used for analysis of pulse pair resolution of digital and analog circuits.

An adjustable dc offset can be used to test circuit tolerances for variations in logic levels.

Their versatility is enhanced by extended facilities for external control of e.g. manual and external triggering, synchronous gating and external duration (pulse shaping).

#### PM 5712 Versus PM 5715

The main difference between the models is found in the facility for transition time setting.

The PM 5712 is primarily intended to supply pulses of positive polarity. However, negative

pulses up to -5V can be generated by use of the dc offset and the normal/inverted switch.

The PM 5712 offers a fixed rise and fall time of 4 ns. Compared to the PM 5715, this unit is somewhat faster and is more economically priced.

This makes the PM 5712 ideal for go/no-go and performance limit tests, such as those in quality control (manufacturing) and performance checks (maintenance).

On the other hand, the PM 5715 covers a much wider spectrum of applications. It features continuously variable settings of transition times, all the way from 6 ns to 500 ms, with separate controls for rise and fall time.

In addition, the PM 5715 allows selection of both positive and negative pulses, over the full pulse amplitude range of -10 to +10V.

In other words, the PM 5715 is best suited for general-purpose applications such as in research and development, where a wide variety of different pulse response tests may need to be made.

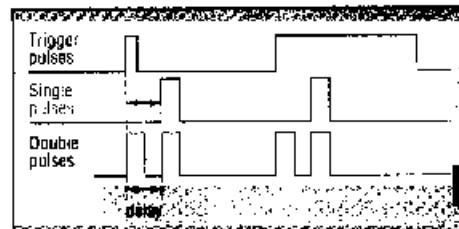
#### PM 5712 and PM 5715

Both models offer three different pulse modes to select from: single pulses, double pulses, and T/2 pulses.

Testing of digital circuitry is facilitated by the possibility to select of either normal or inverted pulses and the variety of external control facilities.

#### Single Pulse Mode

In the single pulse mode, continuous pulses up to 50 MHz are generated with adjustable repetition time. Also pulse duration and delay (with respect to the sync. output) are variable.



#### Double Pulse Mode

In the double pulse mode, twin pulses are generated, of which the pulse pair frequency is variable up to 25 MHz. The pulse duration is commonly set for both pulses, while the delay between the pulses is variable.

#### Square Wave or T/2 Mode

In the T/2 mode, the generators supply fixed square wave pulses, irrespective of the settings for pulse delay and pulse duration.

#### Normal/Inverted

An additional normal/inverted switch allows the logic state of the pulses to be changed. In the normal mode, the generators can supply pulses with duty cycles of from nearly 0% to more than 50%, while in the inverted mode, duty cycles of nearly 100% can be obtained.

#### External Triggering

External triggering enables the PM 5712 and PM 5715 to operate synchronously with external clock signals. All other parameters, such as pulse duration, amplitude, etc. are set on the pulse generator. External trigger signals can vary from 0 to 50 MHz or, when in the double pulse mode, 0 to 25 MHz.

#### External Gating

The external gate mode provides an external synchronous on/off control over the pulse generator. Bursts of output pulses are supplied, only during the presence of the external gate signal. The first pulse coincides with the trailing edge of the gating signal, the last pulse is completed even if the gating signal ends during the pulse.

#### External Duration

Simultaneous selection of external triggering and the T/2 mode enables the generators to function as input signal conditioners. The external input signal defines frequency and pulse duration, while amplitude, dc offset, rise- and fall time and normal/inverted mode selection are defined by the pulse generator settings.

# Pulse Generators

## PM 5712 & PM 5715

### Specifications

#### Technical Specifications

##### Time Parameters

**Pulse Repetition Time:** 20 ns to 1s (1 Hz to 50 MHz)

**Pulse Delay:** 10 ns to 100 ms

**Pulse Duration:** 10 ns to 100 ms

**Jitter:**  $\leq 0.1\%$  of setting  $\pm 50$  ps

##### Main Output Pulse Characteristics

**Pulse Amplitude:** 0.2V to 10V at  $Z_L = 50\Omega$

**Polarity:** PM 5715, + or switchable; PM 5712, + only. Pulses within -5V to +10V possible, using dc offset and norm/inv

**Transition Times:** Corresponding to 10 to 90% of pulse amplitude, at amplitudes of <5V and  $Z_L = 50\Omega$ ; PM 5715, 6 ns to 500 ms; PM 5712, 4 ns fixed

**DC Offset at  $Z_L = 50\Omega$ :** PM 5715, -2.5V to +2.5V  
PM 5712, -5V to +2V

**Max Output Voltage:** Pulse amplitude and dc offset max +10V

**Waveform Aberrations:**  $< +5\%$  of set amplitude  
**Source Impedance:** Current source of 200 mA in 10V range, terminated with internal  $50\Omega$  in 5V and lower ranges

##### Pulse Modes

• Single pulse (delayable)

• Double pulse

• T/2, 50% duty cycle, 50  $\pm 20\%$  duty cycle in 20 ns and 100 ns repetition range

**Logic Mode:** Normal or inverted

**Output Protection:** Against short or open circuit

##### Auxiliary Pulse Output Characteristics

**Pulse Amplitude:** TTL-compatible, +2.5V into  $50\Omega$  or +4.5V open circuit

**Source Impedance:**  $50\Omega$

**Pulse Modes:** Single pulse, double pulse, not T/2 the pulse occurs approx 12 ns ahead of main pulse.

**Output Protection:** Against short or open circuit

##### Sync Output

**Function:** Pre-trigger output, main output pulse is delayable with respect to sync output

**Amplitude:** +1.5V at  $Z_L = 50\Omega$ , +3V open circuit

**Output Impedance:**  $50\Omega$

**Pulse Duration:** Square wave

**Output Protection:** Against short or open circuit

##### External Operating Modes

**TRIGG:** Ext triggered pulses, range: dc to 50 MHz or manual single shot

**GATE:** Synchronous gating, external signal starts and stops the generator

**EXT DUR:** External duration gives pulses with same duration and repetition rate as external input signal, all other pulse parameters are set via the generator

##### External Input

**Function:** For external trigger, gate and duration

**Range:** DC to 50 MHz

**Coupling:** DC

**Input Impedance:** Approx  $220\Omega$  at <1.5V, approx  $800\Omega$  at >1.5V

**Trigger Level:**  $\geq +1V$

**Trigger Slope:** Positive

**Max Input Voltage Without Damage:**  $\pm 12V$

#### General Specifications

##### Power Requirements

**Line:** 100V to 130V and 200V to 260V switchable, 85 to 115V and 170 to 230V solderable

**Line Frequency:** 50 to 400 Hz

**Power Consumption:** 70 VA

##### Environmental Conditions

**Temperature Range:**

**Operating:** 0 to 40°C

**Storage:** 0 to 70°C

##### Mechanical Specifications

**Size:** 210 mm W x 130 mm H x 275 mm L (8.3 in W x 5 in H x 10.8 in L)

**Weight:** 4 kg (8.8 lb)

**Included with Instrument:** Manual, power cord, serialized and dated certificate of calibration

### Ordering Information

#### Models

January 1991 prices

PM 5712/08 Pulse Generator ..... \$1695

PM 5715/11 Pulse Generator ..... 1930

#### Accessories (Also see Section 18)

PM 9581/01 50 $\Omega$  Termination (3W) ..... \$ 75

PM 9585/01 50 $\Omega$  Termination (1W) ..... 35

PM 9588/01 Coaxial Cable Set ..... 295

PM 9584/02 50 $\Omega$  T-Piece ..... 65

#### Manual

PM 5712 Instruction\* (9499-463-00402) \$ 15

\*No charge with purchase of unit

#### Customer Support Services

##### Warranty

One-year product warranty. See Section 17 for further information on warranty terms and conditions.

##### Extended Warranty

A 10% discount is available when you order the following at the time of the instrument purchase or when ordered within the factory warranty period.

SC1-PM 5712 Repair ..... \$ 87

SC2-PM 5712 Calibration ..... 90

SC3-PM 5712 Full Service ..... 167

SC4-PM 5712 Performance Verification+ 54

SC1-PM 5715 Repair ..... 87

SC2-PM 5715 Calibration ..... 90

SC3-PM 5715 Full Service ..... 167

SC4-PM 5715 Performance Verification+ 54

Note: Incoming and/or outgoing calibration readings are available as an option.

Note: The above configurations meet North American power requirements. For other power options, see Section 19.