

TEKTRONIX

DTG5078

The Tektronix DTG5078 is a highly versatile, modular Data Timing Generator from the DTG5000 Series. It functions as a hybrid of a data generator, pulse generator, and DC source. Featuring an 8-slot mainframe architecture, the DTG5078 supports a wide variety of plug-in output modules, supporting up to 64 independent channels in a single unit, with clock frequencies up to 750 MHz and high-accuracy delay control with 1 ps resolution.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE 488.2), LAN (10/100 Base-T), RS-232-C, USB, PS/2 Keyboard/Mouse, VGA, 3.5-inch Floppy Drive
Display	10.4-inch color TFT LCD touch screen, 800 × 600 (SVGA)
Warm-up Time	20 minutes

Physical

Power Supply	100 to 240 V AC (±10%), 47 to 63 Hz, max 480 VA
Operating Temperature	10 °C to 40 °C °C
Dimensions (W×H×D)	435 mm × 218 mm × 565 mm mm
Weight	17.0 kg kg

Timing & Clock

Maximum Data Rate	750 Mb/s
Minimum Data Rate	50 kb/s
Internal Clock Frequency Range	50 kHz to 750 MHz
Frequency Resolution	1 mHz or 8 digits
External Clock Input Frequency Range	1 MHz to 750 MHz
Delay Resolution	1 ps

Mainframe Channel Capacity

Number of Output Module Slots	8
Maximum Number of Channels	64 channels (single mainframe), up to 96 channels (Master/Slave configuration)

DC Outputs

Number of DC Outputs	8
DC Output Voltage Range	-3.0 V to +5.0 V
DC Output Voltage Resolution	10 mV
DC Output Maximum Current	30 mA per channel

Pattern & Sequence Generation

Pattern Depth per Channel	8 Mb (standard), 32 Mb (Option 01), 64 Mb (Option 02)
Maximum Sequence Steps	8,000
Sequence Loop Count Range	1 to 65,536 or infinite
Sequence Subroutine Levels	4
Supported PRBS Polynomials	PRBS7, PRBS9, PRBS11, PRBS15, PRBS23, PRBS31
Hard Disk Drive Capacity	40 GB or more
Floppy Drive	3.5-inch, 1.44 MB
CD-ROM Drive	Built-in CD-ROM

Trigger & Synchronization

Trigger Modes	Continuous, Gated, Triggered (Single), Burst
Trigger Input Impedance	50 Ω or 1 k Ω
Trigger Input Threshold Range	-5.0 V to +5.0 V
Trigger Input Threshold Resolution	0.1 V
Trigger Output Amplitude	1.0 V to 2.5 V into 50 Ω
Trigger Output Impedance	50 Ω
Reference Clock Input Frequency	10 MHz (± 100 ppm)
Reference Clock Input Impedance	50 Ω
Reference Clock Output Frequency	10 MHz
Reference Clock Output Amplitude	1.2 Vp-p into 50 Ω
External Clock Input Impedance	50 Ω
External Clock Input Amplitude	0.4 Vp-p to 2.0 Vp-p

System Control & Interfaces

Operating System	Windows 2000 Professional or Windows XP
USB Ports	5 ports
External Display Port	VGA (D-Sub 15-pin)

Physical Characteristics

Form Factor	Benchtop (5U rackmount optional)
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Environmental & Compliance

Storage Temperature Range	-20 °C to +60 °C
Operating Humidity Range	20% to 80% RH, non-condensing
Storage Humidity Range	5% to 90% RH
Maximum Operating Altitude	3,000 m (10,000 ft)
Maximum Storage Altitude	12,000 m (40,000 ft)
Safety Certifications	UL61010B-1, CAN/CSA-C22.2 No. 1010.1, EN 61010-1
Electromagnetic Compatibility	EN 61326 Class A, FCC Part 15 Subpart B Class A

DTGM10 Module Specifications

DTGM10 - Number of Channels	8
DTGM10 - Maximum Data Rate	100 Mb/s
DTGM10 - Amplitude Range	1.0 Vp-p to 5.5 Vp-p
DTGM10 - Output Impedance	50 Ω
DTGM10 - Rise/Fall Time	< 3.0 ns (20% to 80%)
DTGM10 - Random Jitter	< 5 ps RMS (typical)
DTGM10 - Channel-to-Channel Skew	< 100 ps

DTGM21 Module Specifications

DTGM21 - Number of Channels	4
DTGM21 - Maximum Data Rate	300 Mb/s
DTGM21 - Amplitude Range	0.5 Vp-p to 6.5 Vp-p
DTGM21 - Output Impedance	50 Ω
DTGM21 - Rise/Fall Time	< 1.6 ns (20% to 80%)
DTGM21 - Random Jitter	< 5 ps RMS (typical)
DTGM21 - Channel-to-Channel Skew	< 50 ps

DTGM30/31/32 Module Specifications

DTGM30/31/32 - Number of Channels	2
DTGM30/31/32 - Maximum Data Rate	2.7 Gb/s (limited to 750 Mb/s in DTG5078)
DTGM30 - Amplitude Range	0.1 Vp-p to 2.0 Vp-p
DTGM31 - Amplitude Range	0.1 Vp-p to 2.0 Vp-p
DTGM32 - Amplitude Range	0.1 Vp-p to 3.0 Vp-p
DTGM30/31/32 - Output Impedance	50 Ω
DTGM30/31/32 - Rise/Fall Time	< 150 ps (20% to 80%)
DTGM30/31/32 - Random Jitter	< 3 ps RMS (typical)
DTGM30/31/32 - Deterministic Jitter	< 20 ps p-p (typical)
DTGM30/31/32 - Channel-to-Channel Skew	< 30 ps

Timebase

Internal Timebase Temperature Stability	± 1 ppm (10 °C to 40 °C)
Internal Timebase Aging	± 1 ppm per year

Trigger

Trigger Input Minimum Pulse Width	15 ns
Trigger Input Jitter	<100 ps RMS (typical, standard); <40 ps RMS (typical, with Option 01)

Options

Option 01 Features	Low Jitter / High Resolution Delay
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Clock & Sync Outputs

Clock Output Frequency Range	50 kHz to 750 MHz
Clock Output Amplitude	1.0 Vp-p (into 50 Ω)
Clock Output Impedance	50 Ω
Clock Output Rise and Fall Time	< 150 ps (20% to 80%)
Clock Output Duty Cycle	50% (typical)
Sync Output Amplitude	1.0 Vp-p (into 50 Ω)
Sync Output Impedance	50 Ω
Sync Output Rise and Fall Time	< 150 ps (20% to 80%)

Environmental

Operating Vibration	0.27 G RMS (5 Hz to 500 Hz)
Non-operating Vibration	2.28 G RMS (5 Hz to 500 Hz)
Non-operating Shock	294 m/s² (30 G), half-sine, 11 ms duration
Cooling Clearance (Sides)	15.2 cm (6 in.)
Cooling Clearance (Rear)	7.6 cm (3 in.)

TECHNOLOGY

Modular Data Timing Generation

APPLICATIONS

High-speed digital design validation, timing margin analysis, and semiconductor test

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