

Technical Specifications

PM 3082 / PM 3084 / PM 3092 / PM 3094

DISPLAY	8 X 10 cm viewing area, 16.5 kV acceleration voltage. Parallax free graticule with continuously variable illumination. On screen settings readout.
AUTOSET	Selects proper channel-, timebase- and trigger settings. Function can be customized by the user.
AUTOCAL	Automatic fine adjustment for enhanced accuracy to get optimal performance even under extreme environmental conditions.

Vertical deflection	
Input channels	Four fully attenuated channels or Four (2+2) channels (PM 3092/PM 3082)
On screen indicators	Channel identifiers with ground level indication
Display modes	CH1, (-)CH2, CH3, (-)CH4, Add: CH1 & (-) CH2, CH3 & (-)CH4 In ALternating or CHOPped mode (1 MHz)
Frequency response	DC...>200 MHz -3 dB or (+5... + 40°C) DC...>100 MHz -3 dB (PM 3084/PM 3082) (+5... + 40°C)
In AC mode	Lower -3 dB point: <10 Hz
Bandwidth limiter	20 MHz -3 dB
Rise time	<1.75 ns (calculated: 0.35/BW) or <3.50 ns (PM 3084/PM 3082)
Deflection coefficient	2 mV/div...5 V/div in a 1-2-5 sequence or continuously calibrated control: 2 mV/div... 12.5 V/div.
Channel 3 and 4	0.1 V/div and 0.5 V/div (PM 3092/PM 3082)
Error limit	1.3% (measured over central 6 divisions)
Input impedance	1 M Ω ±1% // 25pF±2pF and 50 Ω ±1% (PM 3094 and CH1 & 2 of PM 3092)
Max. rated input voltage	In 1 M Ω position: 150V (rms; <10 kHz) In 50 Ω position: 5V RMS; 50V AC-Peak (maximum of 50 mJ during any 100 ms interval)
Dynamic range	24 div at 50 MHz (25 MHz PM 3082/PM 3084) 8 div at full bandwidth (100 or 200 MHz)
CMRR	100 : 1 at 1 MHz, 25 : 1 at 50 MHz
Channel isolation	50 : 1 at full bandwidth (100 or 200 MHz)

Horizontal	
Display modes	Main TB and/or Delayed TB, X-defl.

Main time base	
Time coefficients	0.5 s/div...20 ns/div in a 1-2-5 sequence or continuously calibrated control: 1.25 s/div...20 ns/div. For PM 3084 and PM 3082 the fastest timebase setting is 50 ns/div.
Fastest sweep	2 ns/div (magn 10x) or 5 ns/div (PM 3084/PM 3082)
Error limit (magn 1x)	± (1.3% of reading + 0.5% of 8 divisions)
Hold-off	up to 20 div. of MTB setting (max. 2 sec.)

Delayed time base	
Time coefficients	0.5 ms/div...20 ns/div in a 1-2-5 sequence or 0.5 ms/div...50 ns/div (PM 3084/PM 3082)
Fastest sweep	2 ns/div (MANG 10X) OR 5 ns/div (PM 3084/PM 3082)
Error limit (magn 1x)	± (1.3% of reading + 0.5% of 8 divisions)
Trace separation	± >4 div
DELAY TIME MULTIPLIER	
Resolution	1 : 40000
Error limit (magn 1x)	± (0.8% of reading + 0.3% of 8 divisions + 4 ns)
Jitter	1: 25000

Triggering (MTB & DTB)	
Trigger modes	Auto free run, Triggered, Single; Edge triggering, TV triggering.

Edge triggering	
MTB trigger source	CH1...CH4, Composite, Line (mains).
DTB trigger source	Starts, CH1...CH4.
Slope	positive (+) or negative (-)
Coupling	DC, AC (10 Hz), LF-rej (30 kHz), HF-rej (30 kHz).
Level range	± 8 div or level within signal peak-peak range
Level indication	On screen level indicators and numeric readout
Trigger sensitivity:	
PM 3094/PM 3092	0.6 div up to 100MHz, 1.2 div up to 200 MHz, 2.0 div up to 300 MHz (+5...+40°C)
PM 3084/PM 3082	0.6 div up to 50 MHz, 1.2 div up to 100 MHz, 2.0 div up to 200 MHz (+5...+40°C)

TV triggering	
Video standard	HDTV, NTSC, PAL, SECAM.
MTB trigger source	CH1...CH4; Field 1, Field 2, TV-Lines
DTB trigger source	Starts, CH1... CH4... edge, TV-Lines.
Signal polarity	positive or negative
Sensitivity	0.7 div (sync.pulse)

X-deflection	
Deflection source	CH1...CH4, Line (mains)
Deflection coefficient	See vertical deflection
Dynamic range	20 div up to 100 kHz; >10 div up to 2 MHz.
Frequency response	2 MHz - 3 dB
Error limit	5% measured over central 6 divisions
Phase shift	<3° up to 100 kHz

Cursor measurements	
Cursor modes	Manual positioning: Horizontal, Vertical, Both Auto positioning: Vpp or 10-90% or 20-80%
Readout (mode dependent)	Vertical: dV, V1&V2 to GND, Ratio Horizontal: 1/ π (in Hz), Ratio, Phase Auto positioning: Vpp, Vp+& Vp- to GND, Vdc, and Trise
Accuracy (magn 1x)	1% of full scale. Within the central 8 horizontal and 6 vertical divisions for manual cursor positioning.

Interfaces	
RS-232-C	9 pin D connector
Handshake	DSR/DTR, CTS/RTS and Xon/Xoff
Baudrate	75...38400
Format	1 stopbit; 7 or 8 databits; odd/even/no parity
Protocol	CPL=Compact Programming Language = reduced set of powerful instructions for full remote control
GPB/IEEE-488.2	Factory installed option.
Protocol	SCPI = Standard Commands for Programmable Instruments = IEEE standardized protocol

Miscellaneous	
Setting memory	10 instrument setups, battery back-up
Calibration output	2 kHz square, 600 mV peak-peak
Z-modulation input	BNC, 10 k Ω , >2.4V = blanked, <0.5V = unblanked
Time between calibration	2000h or 1 year. (4000h or 2 years if error limits are doubled).

Power supply	
Line voltage	100...240V (± 10%)
Line frequency	50...400 Hz (± 10%)
Power consumption	60W (80W with all options installed)

Mechanical data	
Fan	Proportionally regulated forced air
Width x Height x Length	341 x 139 x 481 mm = 13.4 x 5.5 x 18.9 inch (excluding handle and feet) 391 x 147 x 551 mm = 15.4 x 5.8 x 21.7 inch (including handle and feet)
Weight	8.5kg = 19 lb

Environmental data	
Meets requirements of Temperature	MIL-T-28800D Type III, Clas 3, Style D, Color R 0°C... +50°C (operating), -40°C... +70°C (storage)
Humidity	95% (storage)
Altitude	4.6 km = 15.000 ft (operating), 12 km = 40.000 ft (transport)
Vibration	Frequency 5...55Hz. Max acceleration at 55Hz 30 m/s ²
Shock	6 shocks along each axis, half sine wave, 6...9 msec, peak acceleration 400 m/s ²
Bench handling	Meets MIL-STD-810, method 516, procedure V
Safety	Meets requirements of: EN 61010 CAT II Pol2, CSA C22.2 No 231, Low Voltage Directive 73/23/EEC.
EMC	Electromagnetic Compatibility Directive 89/336/EEC, MIL-STD-461C: CE01 Part 2 (narrow band), CE01 Part 4, CS0, Part 2, C506 (300 V max.), RE01 Part 5 and 6, RE02 Part 2 (1 GHz max.).
Magnetic susceptibility	Deflection for extreme conditions: <0.7 div/mT

Safety	
Meets requirements of	EN 61010-1 CAT II Pollution Degree 2, CSA C22.2 No231, Low Voltage Directive 73/23/EEC.
Electromagnetic Compatibility (EMC)	
Meets requirements of	EMC directive 89/336/EEC: emission EN50081.1, susceptibility EN50082.1
Meet requirements of	MIL-STD-461C: Part2 CE01 (narrow band), Part4 CE03 Part2 CS01, Part5 CS06 (limited to 300V) Part5 and 6 RE01, Part2 RE02 (max. 1 GHz)
Auxiliary output option	
Y-out (channel 1)	Factory installed option includes: BNC, 50 Ω , 10 mV/div in 50 Ω , 20 mV/div in 1 M Ω
MTB-gate-out	BNC, 1 k Ω , TTL compatible levels
DTB-gate -out	BNC, 1 k Ω , TTL compatible levels
External trigger	External trigger input replacing line trigger source is available on request.
Standard accessories	
Included	Two 10:1 probes with readout (full BW), Operating guide, Reference manual, Front cover, Power cord; Free service manual on request. IEEE/SCPI manual when applicable

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