

# Combination Analog/Digital Storage Oscilloscopes

## PM 3335

### Simple to Operate

While the PM 3335 offers capabilities never before seen in a cost-effective scope, this is not at the expense of ease of use. Ergonomics was a vital element in design of the instrument. All the innovations first introduced by on Philips SMART scope range of 60 MHz and 100 MHz analog oscilloscopes are shared by the PM 3335. Innovations such as:

- Direct parameter readout of the present set-up on an LCD panel for at-a-glance checking of information, avoiding the need to look at control settings on a crowded text plate.
- Fast action up/down controls give finger tip setting of range values quickly and securely. Reliability is guaranteed by cold switching through microprocessor control. All rocker keys are located directly next to the clear LCD for readout and immediate confirmation of set-up.
- Front panel layout is logical, with similar functions grouped together for instant recognition. All controls that relate to variable settings such as Y-pos or VAR are located on the right hand side of the front panel resulting in a clear layout.
- Softkeys are positioned directly under the CRT display, mounted flush in the screen bezel. Softlabels appear on the screen just above these keys with a readily understandable menu sequence and selection. After acquisition of the signal, attention is focused on the display, avoiding mistakes that can occur when selections are out of the field of vision.

The result is an instrument that is readily understood and easy to use, while offering a versatile capability for fast problem solving.

### Autoranging, Autoscaling and Autoreset

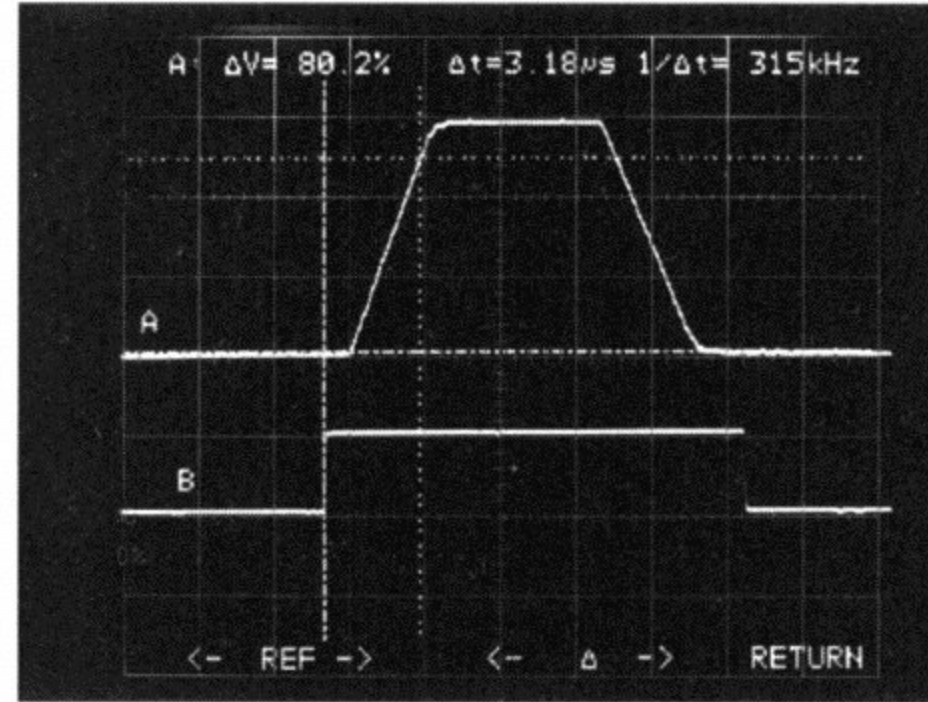
Another first for the PM 3335 is its full function autoreset. A single push of the autoreset button and any signal is automatically scanned and an optimum display of the trace is provided. It is not a factory preset, but is a full autoranging of time base and amplitude parameters depending on the incoming input signal. In addition, each channel is searched for a signal and if no signals are present, that channel is not displayed to avoid confusing information. Moreover, the auto-set selects the best trigger source for maximum trace stability. No other manufacturer gives you all these facilities for such a low price.

### Modular Construction

The PM 3335's modular design and construction gives unparalleled serviceability. Swing up PCBs allow easy access to all circuits, for quick and efficient repair and service. Built in test routines with on screen prompts guide the service engineer quickly to the problem; and a quick check and adjust facility provides verification of the correct functioning of the instrument for reliable measurement results.

The modular construction also allows thorough testing of each module in production, before being built into the complete instrument, after

which final functional tests and adjustments are made. This results in reliable instruments that give trouble free operation throughout their life.



Phase measurements between channels are quickly and accurately made thanks to the extensive cursor facilities and the simultaneous acquisition on both channels. Without this simultaneous sampling the timing difference between the channels would result in measurement faults.

## Specifications

### Technical Specifications

#### Analog Mode

##### Vertical

**Display Modes:** Ch A, Ch B, -Ch B, Ch A+Ch B, Ch A-Ch B (ALTErnate or CHOPped)

**Frequency Response:** DC to >60 MHz, -3 dB (20 mV/div to 10 V/div); dc to >35 MHz, -3 dB (2 mV/div to 10 mV/div); ac, lower 3 dB point is <10 Hz

**Rise Time:** <5.8 ns (20 mV/div to 10 V/div); <10 ns (2 mV/div to 10 mV/div)

**Deflection Coefficient:** 2 mV/div to 10 V/div in 1, 2, 5 sequence

**Error Limit:** ±3%, continuous control between steps with ">" flashing on LCD panel as warning symbol for uncalibrated setting

**Input Impedance:** 1 MΩ ±2%; 20 pF ±2 pF

**Max Input Voltage:** 400V (dc + ac peak)

**Dynamic Range:** >24 div at 10 MHz, >8 div at 60 MHz

**CMRR:** 100:1 at 1 MHz

##### Horizontal

**Display Modes:** Time base, or XY displays using Ch A and/or Ch B (vertical) and Ch A, Ch B or Ext (horizontal)

**Time Base:** 0.5 s/div to 50 ns/div in 1, 2, 5 sequence

**Expansion:** x10, fastest sweep speed 5 ns/div

**Error Limit:** ±3%; ±4% in x10; continuous control between steps with ">" flashing on LCD panel as warning symbol for uncalibrated setting

##### Triggering

**Trigger Modes:** Auto (free run), non-auto triggered, single sweep

**Trigger Sources:** Ch A, Ch B, composite (Ch A, Ch B), Ext (dc or ac); line LCD indicates not-triggered, triggered or armed status

**Trigger Coupling:** Auto peak-to-peak (p-p), dc, TVF, TVL, LF Reject, HF Reject

#### Trigger Sensitivity:

	Internal	External
10 MHz	0.5 div	50 mV
60 MHz	1.0 div	150 mV
100 MHz	2.0 div	500 mV
TVF/TVL	0.7 div sync	70 mV sync
Level Range	±8 div	±800 mV

Slope, positive or negative; TVF or TVL, positive or negative

#### X-Deflection

**Deflection Coefficient:** Via Ch A or Ch B, 2 mV/div to 10 V/div; via Ext input, 100 mV/div

**Frequency Response:** DC to 2 MHz

**Error Limit:** ±5%

**Phase Shift:** <3° (at 100 kHz)

**Ext Input Impedance:** 1 MΩ ±2%; 20 pF ±2 pF

**Max Input Voltage:** 400V (dc + ac peak)

#### Digital Mode

All specifications as analog part unless otherwise stated

##### Vertical

**Resolution:** 8 bit

**Display Modes:** Ch A, Ch B, -Ch B

**Frequency Response:** DC to >5 MHz, -3 dB (2 mV/div to 10 V/div)

##### Horizontal

**Display Modes:** Recurrent, single shot, multiple shot (up to 2)

##### Time Base

**Recurrent, Single, Multiple Shot:** 50 s/div to 10 μs/div

**Timing Accuracy:** ±0.1%

**Display Expansion:** x1 to x32

##### Horizontal Resolution

**Single Channel:** 8192 samples/channel

**Dual Channel:** 4096 samples/channel

##### Signal Acquisition

**Maximum Sample Rate:** 20 MS/s, simultaneously for both channels

**Trigger Delay:** 20 divisions of pretrigger

**Display Expansion:** x1 to x32 horizontal

##### Memory

**Storage Registers:** 2

**Number of Traces Stored in Each Register:** up to 2

**Depth of Acquisition Memory:** 8192 words

**Depth of Reference Memory:** 8192 words

**Vertical Memory Resolution:** 8 bit

**Display Modes:** Ch A, Ch B, Reg A, Reg B in any combination

##### Cursors

**Horizontal Resolution:** (all display modes) 1:1000 over 10 divisions

**Vertical Resolution:** 1:200 over 8 divisions

**Read Out Resolution:** 3 digits amplitude and time

**Calculation Functions:** dV, dt, 1/dt, ratio, phase