

V_{DC} accuracy 0.03%

V_{AC} in volts and dB (AC-coupled RMS)

Current measurements with extremely low voltage drop

Frequency measurements up to 10MHz; time measurements up to 10^5 s

Relative reference measurements

Fast auto-ranging

Battery version PM 2521/23 available

Whilst of small dimensions, the PM 2521 offers an unusually comprehensive range of facilities not normally found in modern multimeters. Its unique measurement capabilities are further enhanced by micro-processor control which both speeds and simplifies operation.

The attractive basic specification includes AC_{RMS} and DC voltage with $10\mu V$ resolution, AC_{RMS} and DC current ranges having $0.001\mu A$ resolution (up to 10A) plus a full resistance range from $10m\Omega$ to $20M\Omega$. In addition, there is a special setting for semiconductor measurements. Bandwidth is 100kHz.

All results are displayed on a $4\frac{1}{2}$ -digit LCD panel, having 13mm numerals. Parameter selection is by means of a single rotary selector knob and is indicated together with polarity, on the display panel. Ranging is automatic in the normal mode; manual range selection is also possible.

Even more features

In addition to the basic measuring facilities, PM 2521 will handle AC volts either directly in volts, or in dB, both AC-coupled RMS. Frequency/time measurements can also be made, up to 10MHz and 10^5 s, respectively. Moreover, temperature measurements can be made, using Pt-100 probes.

Relative reference measurements

Another useful feature which can be applied in several ways, is the reference measurement capability for V_{DC} , dB, resistance, temperature and diode applications. Any selected value can be used as the reference "zero". This reference level having been set, all subsequent readings are displayed as either a positive or negative deviation. One typical use of this facility is checking high ohmic value components for long-term stability.

dB measurements

V_{AC} measurements can be expressed in dB by depressing a button. The display will then indicate the value, directly in dB, with 1mW into 600Ω as the 0dB reference. By applying the previously described relative reference technique, any desired "zero" point may now be selected and the measurements will be shown as a dB gain or loss. The fast auto-



ranging allows for direct ratio measurements between 1mV and 600V.

Temperature

PM 2521 accepts standard Pt-100 probes which allow direct temperature readings between -60° and $+200^\circ C$.

Frequency/time

Frequency can be measured up to 10MHz, with a max. resolution of 0.1Hz, and time up to 10^5 s. Measurement of the signal voltage is first made which causes the input sensitivity of the counters to become automatically adjusted to the level of the applied signal. This setting is then maintained for the subsequent frequency measurement, which is displayed as a direct frequency value. In the time position, both pulse width and pulse repetition time measurements are possible on both positive- and negative-going pulses. The trigger level is adjustable over the whole (internally attenuated)

trigger amplitude range and is displayed when selected. At the instant the trigger fires a 'GATE' sign appears on the display. By adjusting the trigger level (using a thumb-wheel) and observing the 'GATE' signal, pulse peak values may be obtained.

Other options

The already comprehensive facilities described may be further extended by the use of optional accessories. Such options include a HOLD probe which will "freeze" the display and allow, e.g., the operator to concentrate on locating the test points. Also, an HF probe is available which extends the frequency range to 700MHz. For high tension work, an HT probe permits measurements up to $30kV_{DC}$ and heavy currents up to 200A may be handled using the current shunt, current probe and transformers. All of which further enhance the already highly versatile capabilities of this very compact instrument.

TECHNICAL SPECIFICATION PM 2521

Function	V _{DC}	V _{AC} RMS	V _{AC} dB	IDC	I _{AC} RMS	R	Hz	TIME	°C	LEVEL
Max Display Value	20 000	20 000	99.9	2 000	2 000	20 000	99 999	99 999	2 000	2 000
Ranges (autoranging except*)	200mV 2V 20V 200V 1 000V	200mV 2V 20V 200V 600V*	-57.7dB to +57.7dB	2µA 20µA 200µA 2mA 20mA 2A 20A	2µA 20µA 200µA 2mA 20mA 2A 20A**	200Ω 2kΩ 20kΩ 200kΩ 2MΩ 20MΩ	10kHz* 100kHz 1MHz 10MHz	10s 100s 1 000s 10 000s	-50°C to +200°C	2V* 20V* 200V* 1 000V*
Max Resolution	10µV	10µV	0.1dB	1nA	1nA	10mΩ	0.1Hz	100µs	0.1°C	1mV
Accuracy (% reading + range).	0.03+0.01	0.3+0.15 (40-500Hz) 1.0+0.15 (500Hz-20kHz) 5.0+1.0 (20kHz-100kHz)	±0.2dB (-31.7 to +47dB) ±1dB (+47 to +57.7dB) ±1.5dB (-31.7 to -57.7dB)	0.2+0.05	0.4+0.1	0.2+0.1 (≤200kΩ) 1.0+0.1 (≥2MΩ)	0.005+0.001 (<1MHz) 0.01+0.001 (>1MHz)	0.005+0.001	1.0+0.2°C (0-100°C) 3.0+0.2°C (-50-+200°C)	As VAC
Temperature coefficient of reading per °C	0.01%	0.03%	0.03%	0.02%	0.03%	0.02% (≤200kΩ) 0.05% (≥2MΩ)	—	—	—	As VAC
Input characteristics	Input impedance ≤2 V 20 V ≥200V	20MΩ/60pF 11MΩ/85pF 10MΩ/95pF	voltage drop ≤2mA - 2.5mV 20mA, 200mA - 25mV ≥2A - 250mV	Max open circuit voltage 4V Measuring currents from 10mA to 100nA	Sensitivity 150mV (≤1MHz >300mV)	Sensitivity 100mV (≥1µs ≤200mV)	—	—	—	Input Impedance as V _{AC}
CMRR DC AC 50Hz SMRR 50Hz±1%	100dB 100dB 86dB	100dB 80dB	as VAC							
Max CM Voltage Response time Response time Including ranging	560V _{pk} 0.7s 1.5s	560V _{pk} 1.5s 3s	560V _{pk} 1.5s 3s	0.7s 1.5s	1.5s 3.0s	0.7s 2.5s	— —	— —	— —	— —
Overload protection		1000 V peak		250Vrms ≥200nA	≤20mA not protected	250V _{RMS}	1000V _{pk}	1000V _{pk}	—	1000V _{pk}
Relative reference Max display	YES 40 000	YES 40 000	YES 99.9	NO 2 200	NO 2 200	YES 22 000	NO 99 999	NO 99 999	YES 2 200	NO 2 200
Additional Information		Crest factor 2 Max V x Hz= 10 ⁷ AC-coupled	Reference-1mW/600Ω	Maximum	Crest Factor 2 20A for 20s		Gate times from 10ms to 10s Adjustable trigger level	Adjustable trigger level	Pt-100	

* 600VAC accuracy 40...60Hz: 0.3% rdg. +0.3% rng.
** 20A measurement: max. 20s, 10A constant

GENERAL

Display	LCD 13 mm digits with range and measuring parameter display integrating (delta modulation)
ADC system	2.5 measurements/s
Read rate	with optional data hold probe PM 9263
Data hold	by manual/automatic switch
Range hold	upper 20 200 lower 01 800
Range limits	"OL"
Overflow indication	23°C ± 1°C; RH 20%...80%
Reference conditions	dewpoint 26°C
Operating temperature	0°C...+40°C
Storage temperature	-40°C...+70°C
Calibration interval	1 year
Warming-up time for calibration	30min
Safety	Class I according to IEC 348
Power supply	mains 220V ± 10% (47...63Hz) instrument can be adapted for 110 and 240V Power consumption 10VA
Dimensions (wxhxd)	95 x 235 x 280mm (3.7 x 9.3 x 11-in)
Weight	2kg (4.4lb)

Accessories supplied

- Mains cable
- Set of test leads PM 9266 (incl. probes)
- Spare fuses
- Operation manual

ORDERING INFORMATION

PM 2521/03 Standard version
PM 2521/23 Battery version

Optional accessories

PM 9210	HF probe
PM 9212	Accessory set for HF probe
PM 9244	Current shunt
PM 9245	Current transformer
PM 9246/03	HT probe
PM 9249/01	Temperature probe
PM 9263/01	Data hold probe
PM 9279/01	Carrying case