

2. TECHNICAL DATA

This apparatus has been designed and tested in accordance with IEC publication 348, Safety Requirements for Electronic Measuring Apparatus, and has been supplied in a safe condition. The present instruction manual contains some information and warnings which have to be followed by the user to ensure safe operation and to retain the apparatus in a safe condition.

All values mentioned in this description are nominal; those given with tolerances are binding and guaranteed by the manufacturer.

Manufacturer	NV Philips MIG S & I
Type number	PM 2521
Designation	Digital multimeter
Measuring quantities	V $\overline{}$, V $\sim$, A $\overline{}$, A $\sim$, Ω , $\rightarrow$, s, Hz, $^{\circ}\text{C}$, V peak

2.1. MEASURING PERFORMANCE

2.1.1. Direct voltage measurements

Ranges	<table><tr><td>mV</td><td>200</td></tr><tr><td>V</td><td>2 - 20 - 200 - 2000 V</td></tr></table>	mV	200	V	2 - 20 - 200 - 2000 V
mV	200				
V	2 - 20 - 200 - 2000 V				

Maximum input voltage in range 2000 V	1000 V
Resolution	10 μV in range 200 mV
Number of representation units	21000
Accuracy	$\pm$ (0,03 % of reading + 0,01 % of range)
Temperature coefficient	$\pm$ 0,01 % of reading / $^{\circ}\text{C}$

Input impedance	<table><tr><th>Range</th><th>Input impedance</th></tr><tr><td>200 mV 2 V</td><td>20 MΩ//60 pF</td></tr><tr><td>20 V</td><td>11 MΩ//85 pF</td></tr><tr><td>200 V 2000 V</td><td>10 MΩ//95 pF</td></tr></table>	Range	Input impedance	200 mV 2 V	20 M Ω //60 pF	20 V	11 M Ω //85 pF	200 V 2000 V	10 M Ω //95 pF
Range	Input impedance								
200 mV 2 V	20 M Ω //60 pF								
20 V	11 M Ω //85 pF								
200 V 2000 V	10 M Ω //95 pF								

Offset current at input	<20 pA
Series Mode Rejection Ratio (SMRR)	86 dB for ac signals at 50 Hz $\pm$ 1 % 60 dB for ac signals at 60 Hz $\pm$ 1 %
Maximum Series Mode signal	2x range end value with exception of range 2000 V (1000 V)
Common Mode Rejection Ratio (CMRR)	100 dB for dc signals 100 dB for ac signals of 50 Hz or 60 Hz $\pm$ 1 %
Maximum Common Mode voltage	400 V, 560 V peak
Response time	0,7 s without ranging 1,5 s including ranging
Zero setting	Automatic zero setting of the ADC Manual with zero potentiometer at the front of the PM 2521
Zero point drift	5 $\mu\text{V}/^{\circ}\text{C}$ between 0 $^{\circ}\text{C}$ and 35 $^{\circ}\text{C}$ 20 $\mu\text{V}/^{\circ}\text{C}$ between 35 $^{\circ}\text{C}$ and 45 $^{\circ}\text{C}$
Relative reference setting	With pushbutton ZERO SET at the front of the PM 2521

Maximum input voltages

In all ranges:

Between Hi and Lo 1000 V rms

Between Hi and earth 1000 V rms

Between Lo and earth 400 V rms

Maximum VHz product 10^7

2.1.2. Alternating voltage measurements

Ranges

mV	200
V	2 20 200 2000

Maximum input voltage in range 2000 V

600 V

Resolution

$10\ \mu\text{V}$ in range 200 mV

Measured value less than 0,5 % of range is displayed as zero

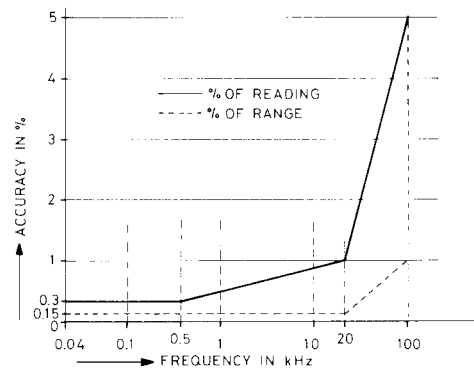
Number of representation units

21000

Accuracy

(valid between 3 % and 100 % of range)

Range 200 mV up to and including 200 V	
40 Hz - 500 Hz	$\pm (0,3\% \text{ of reading} + 0,15\% \text{ of range})$
at 20kHz	$\pm (1\% \text{ of reading} + 0,15\% \text{ of range})$
at 100kHz	$\pm (5\% \text{ of reading} + 1\% \text{ of range})$



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Temperature coefficient

Range 2000 V	
40 Hz - 60 Hz	$\pm (0,3\% \text{ of reading} + 0,15\% \text{ of range})$

$\pm (0,03\% \text{ of reading }/^{\circ}\text{C} + 0,01\% \text{ of range }/^{\circ}\text{C})$

Input impedance

Range	Input impedance
200 mV 2 V	20 M Ω //60 pF
20 V	11 M Ω //85 pF
200 V 2000 V	10 M Ω //95 pF

Common Mode Rejection Ration
(CMRR)

100 dB for dc signals

80 dB for ac signals 50 Hz or 60 Hz $\pm 1\%$

AC detector

RMS convertor, ac coupled

Crest factor

2 at range end

Response time

1,5 s without ranging

3 s including ranging

Maximum input voltage

In all ranges:

Between Hi and Lo 600 V rms

Between Hi and earth 1000 V rms

Between Lo and earth 400 V rms

Maximum dc voltage 400 V

2.1.3. Direct current measurements

Ranges

μA	2	20	200
mA	2	20	200
A	2	20	

Maximum input current in range 20 A

10 A

Resolution

1 nA in range 2 μA

Number of representation units

2100

Accuracy

$\pm (0,2\% \text{ of reading} + 0,05\% \text{ of range})$

Temperature coefficient

$\pm (0,02\% \text{ of reading} / ^\circ\text{C} + 0,005\% \text{ of range} / ^\circ\text{C})$

Voltage drop over shunt

Range	Voltage drop
2 μA 20 μA 200 μA 2 mA	$<2,5 \text{ mV}$
20 mA 200 mA	$<25 \text{ mV}$
2 A 20 A	$<250 \text{ mV}$

Response time

0,7 s without ranging

1,5 s including ranging

Protection

Range 2 μA - 20 mA; 250 V rms

Range 200 mA - 20 A are not protected

$I_{\text{max.}} = 20 \text{ A}$ for 20 seconds

Maximum Common Mode voltage

400 V rms, 560 V peak

Maximum input voltages

In all ranges:

Between Hi and Lo 250 V rms

Between Hi and earth 400 V rms

Between Lo and earth 400 V rms