ANALYSER

1254: Four independent channels operating in parallel

Nominal Range	Sensitivity Integration <100ms	Sensitivity Integration ≥100ms	Full-scale peak input	Com. Mode rejected
30mV	10μV	1μV	50mV	30V
300mV	100μV	10μV	500mV	30V
3V	1mV	100μV	5V	30V
30V	10mV	1mV	50V	500V
300V	100mV	10mV	500V	500V

Maximum input, Hi or Lo to ground: 500V peak
300V rms

Input configuration

Connection: differential
Coupling: dc or ac (<1dB at 2.5Hz)
Impedance: Hi or Lo to ground: 1MΩ
front sockets, Channels 1 and 2 only: <70 pF
rear sockets, Channels 1 to 4: <100 pF
Common mode rejection, dc coupling, up to 100Hz:
up to 50V peak: >65dB
over 50V peak: >60dB
Cross channel isolation,
1kΩ across inputs, up to 10kHz: >100dB

Integration time:

minimum: the longer of 1 cycle or 10ms
maximum: 10^6 cycles or 10^5s

Auto-integration (Channels 1 and 2 only)

minimum: the longer of 3 cycles or 1.5s
maximum: the programmed integration time
Variance in results, at 90% confidence:
long integration (signal >0.02% range): <1%
short integration (signal >0.2% range): <10%

Measurement delay

Variable from zero to 10^6 cycles or 10^5s.

RESULTS

Single channel or point-to-point

Processing, applicable to any of above:
Multiplication by $(j\omega)^n$ where $n = \pm 1$ or ± 2.
Division by a vector, specified as $a + jb$ or r, θ
or as last displayed result

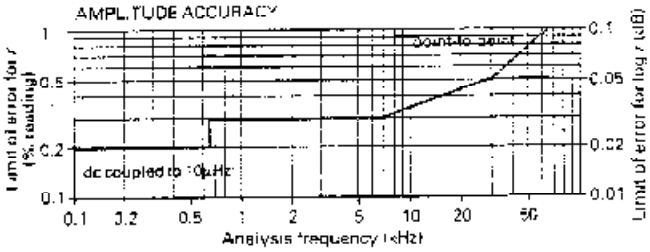
Limit check: high and low on a or b or r or log r or θ
pass or fail accepted

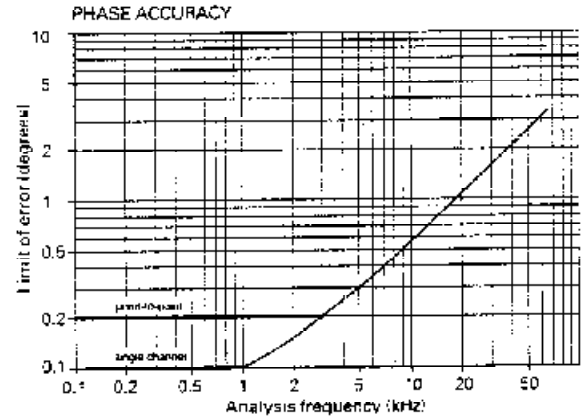
History file: stores up to 450 results after processing and limit check.
outputs result with further limit check.

Forms of results: $a + jb$ or r, θ or log r, θ
Resolution: a, b and r: *5 digits + exponent
log r: 0.01 dB
θ (degrees): 0.01°
θ (radians): 0.1 mrad

*Single channel, unprocessed, results are displayed as volts or millivolts. When integration is <100ms these are resolved to 4 digits.

Accuracy, ambient temperature 20±10°C.
All ranges, integration >200ms, input >10% full scale.
Data valid for 1 year after calibration.





1254 converts from one co-ordinate form to another with negligible arithmetic error.

GENERATOR

	Range	Max Resolution	Error
Frequency	10μHz to 65.535kHz	1 in 65535	<0.01%
Amplitude	10mV to 1.023V	1 in 1023	<1% ± 1mV
	1.023V to 10.23V	1 in 1023	<1% ± 10mV
Bias	− 10.23V to + 10.23V	1 in 1023	<1% ± 10mV

Output is short-circuit proof.
Maximum output (bias + signal): 15V peak
Output impedance: 50Ω + 2%
Maximum voltage, Lo to ground: 150V
Impedance, Lo to ground: 100kΩ, <100pF

Waveform: sine, square, or triangle
Distortion, for sinewave: <1%
Stop control: immediate, or at 0°, 90°, 180° or 270°
Stop input: contact closure or TTL logic 0

Sweep: logarithmic, up or down
linear, up or down
harmonic

PLOTTING

General

Data source:	single channel or point-to-point
Parameters, X or Y axis:	a, b or r
	log r (dB)
	θ (degrees)
	f (linear scale)
	f (log scale)
Type of Plotter:	analog or digital (GPIB)
Type of plot	point (separate points)
	vector (joined points)
Plot size:	A3 or A4 or adjustable in 0.025mm steps

Digital plotting

Compatible with Enertec-Schlumberger and Hewlett-Packard plotters.

Interface:	built-in IEEE 488

Analog plotting

Interface:	option 12503
Connector:	D-type, 25 way
X, Y drives, bottom left:	0V, 0V
top right:	10V, 10V
Pen drop delay selectable:	0.4, 0.6, 0.8 or 1.2s

SYNCHRONISER — Option 12501

Input configuration

Connection:	differential, rear terminals
Coupling:	dc or ac (<3dB at 3Hz)
Impedance, Hi or Lo to ground:	>200kΩ, <100 pF
Common mode rejection,	
dc coupling, up to 100Hz:	>50dB
maximum rejected:	20V
Maximum input, Hi or Lo to ground:	350V peak, 250V rms

Synchronisation

Frequency range:	1mHz to 65kHz
Sensitivity:	0.25V
Level adjustment:	± 5V in steps of 0.02V
Time to synchronise:	the longer of 4 cycles or 500ms

MODULATOR-DEMODULATOR — Option 12502

Input configuration

Two independent carrier inputs.

Connections:	differential, rear terminals
Coupling:	ac
Impedance, Hi or Lo ground:	>100kΩ, <100 pF
Common mode rejection, up to 100Hz:	>50dB
Maximum common mode:	300V
Maximum input, Hi or Lo to ground:	350V peak, 250V rms

Carriers 1 and 2

Frequency range:	48Hz to 20kHz
Voltage range:	6V to 250V rms

Generator output

May modulate either Carrier 1 or Carrier 2.

Carrier phase shift, 50Hz to 300Hz:	<3°
300Hz to 3kHz:	<1°
3kHz to 20kHz:	<6°

Analysers

Either carrier may demodulate any analyser.

Quadrature rejection, 1254:	>26dB
1251:	>14dB

Limits of error, when demodulating:
Mod frequency = 0.05 × carrier. Input > 10% full scale, integration 200ms.

r (% reading):	<0.5
log r (dB):-	<0.05
θ, single channel (degrees):	<0.5
θ, point-to-point (degrees):	<1

INTERFACES — standard fittings

Serial port — compatible with RS423 and RS232

Selectable data rates:	110, 150, 300, 600, 1200 2400, 4800, 9600 baud

GPIB port — IEEE 488 (1978)

Fully programmable talker/listener.
Switch selected talk only.

Maximum data rate:	1000 bytes/s
Functions implemented:	SH1, AH1, T5, TE0, L4, LE0, SR1, RL1, PP2, DC1, C0, DT0

GENERAL

Power supply:	switch selected, 90 to 126V or 198 to 252V 48 to 65Hz	
	consumption, with no options:	120VA
	with all options:	200VA

Memory battery, charged when mains is on:

discharge time:	>100 hr
charge, from fully discharged:	<12 hr

Environment:	temperature, operating:	0 to 50°C
	storage:	−30 to 70°C
	temp for specified limits:	20 ± 10°C
	humidity, non-condensing:	95%

Dimensions:	height:	176mm (6.93ins)
	width:	432mm (17 ins)
	depth:	573mm (22.56 ins)
	weight:	18 kg (40 lbs)