ANALOX
GM7 MicroStat
A research analyser with a unique assay menu including:
Glucose, Lactate, Cholesterol, Alcohol, Acetoacetate, Urate, Urea, Pyruvate, Glutamine, Ammonia, Creatinine, 3-Hydroxybutyrate, Glycerol and Triglycerides.

Major Application Areas:

Diabetes Research Studies
All the important parameters i.e, glucose, 3-hydroxybutyrate, acetoacetate, and lactate can now be made on one desktop analyser. The small sample size and fast time to result make the analyser ideal for glucose clamping studies. Manual calibration ensures that the reagent is not wasted and avoids “lock out” at critical moments which is characteristic of instruments with automatic calibration.

Clinical Research
The unique analysis menu in the GM7 enables researchers to undertake metabolite studies of analytes not normally available even on much larger multichannel instruments many times more expensive. Analytical parameters are controlled via the keyboard to optimise measurement conditions for special concentration ranges.

Biochemical Research
The analyser incorporates two user-definable assay options which can be used for studies on either novel oxidase or dehydrogenase enzyme systems. A reagent kit is also available to monitor NADH produced or consumed in cofactor linked reactions.

Analytical Principle:

In oxidase enzyme reactions, the analyser measures the rate of oxygen uptake and under appropriate controlled conditions, this is directly proportional to the concentration of the analyte.

Example: Lactate in whole blood or plasma:

$$L-Lactate + O_2 \xrightarrow[(LOD)]{L-Lactate\ Oxidase} Pyruvate + H_2O_2$$

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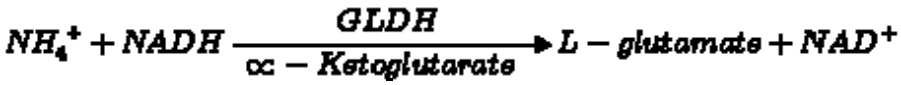
Substrates for dehydrogenase enzymes are measured using two stage reactions in which the oxidation of NADH (produced or consumed) is monitored.

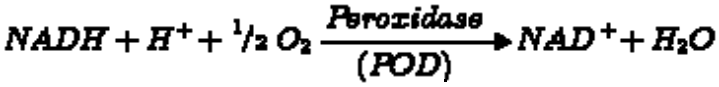
Example: Ammonia in plasma - Ammonia is converted to L-glutamate with -ketoglutarate in the presence of glutamate dehydrogenase (GLDH) and excess NADH in a brief pre-reaction:

Stage 1:



Under the conditions of the assay, the rate of oxidation of excess NADH by peroxidase (POD) is inversely proportional to ammonia concentration:

Stage 2:



Operation:

For many assays, injection of sample is all that is needed to obtain a result and prepare the analyser for the next analysis. Sample injection via an accurate positive displacement pipette triggers the complete analytical cycle and a hard-copy result is printed within 20 seconds. The analyser is first calibrated with a standard of the metabolite in question.
Samples can be whole blood (for key assays such as lactate, glucose, urea), plasma, serum or other biological fluids.
Analyses are menu-driven via the 32-character display which guides the operator through the complete procedure. Subsidiary menus are reached via the keypad which enable the user to change analysis type, optimise operational modes, utilise special functions and perform statistical data analysis. The display also provides self-test diagnostics in relation to electrode status and reagent activity.
Changeover between analytes is quickly and simply effected and all fluid pathways inside the analyser can be rapidly sterilised without compromising performance.

Analytical Performance GM7			
	Glucose	**Lactate**	**Alcohol**
Precision (within run)	Plasma; n=20, CV=1.4% @ 10.0mmol/L Whole blood; n=40, CV=0.85% @ 12.0mmol/L	Plasma; n=30, CV=0.6% @ 10.0mmol/L Whole blood; n=22, CV=1.6% @ 5.0mmol/L	Plasma; CV=1-2% @ 100mg/dl Whole blood; CV=2-3% @ 85mg/dl
Accuracy - Recovery	Plasma; mean 100.9% (99.2-106.7%) range 1.5-30.0mmol/L Whole blood; mean 96.7% (89.1-100.2%)	Plasma; mean 99.2% (96.0-104.0%) range 2.5-10.0mmol/L Whole blood; mean 96.7% (88.0-104.0%)	Spiked serum; y (Analox) = 0.973 (true) + 2.1mg/dl r = 0.9929, n = 89
Accuracy - Method Comparison, y = GM7	Plasma vs Hexokinase y = 0.96 (HK) - 2.5mg/dl r = 0.999; n = 156	Plasma vs Boehringer UV, n = 20; r = 0.997 y = 0.967(UV) + 0.003 Whole blood vs YSI 23L, n = 56, r = 0.998 y = 1.017(YSI) - 0.087	Whole blood vs GC, y (Analox) = 1.04(GC) + 1.3mg/dl r = 0.9905, n = 27
Linearity	0 - 30mmol/L (540mg/dl) using 10µl sample 0 - 50mmol/L (900mg/dl) using 5µl sample	0 - 10mmol/L (90mg/dl) using 7µl sample 0 - 20mmol/L (180mg/dl) using 3.5µl sample	0 - 200mg/dl (43mmol/L) using 5µl sample 0 - 400mg/dl (86mmol/L) using 2.5µl sample

Instrument Specifications:

Method	Enzymatic oxygen-rate
Sensor	Clark-type amperometric oxygen electrode
Reaction temperature	30°C
Display	32 character backlit LCD
Printer	16 column dot matrix, 1 line/sec
Statistical programmes	a)Sequential, giving mean, S.D and C.V. b) Selected results for 2 analytes, retains up to 75 entries
Interface	Serial data port, optional Windows software available
Power	100-250V AC, 50-60Hz, 12-15V DC, 60VA
Dimensions	27cm (width) x 35cm (depth) x 25cm (height)
Weight	5.8Kg

Ordering Information:

GM7 MicroStat	Analyser, mains version
P-GM7 MicroStat	Portable analyser, rechargeable battery/mains
GMRD-002A	Glucose oxidase reagent, 360 analyser cycles
GMRD-011	Glucose standard, 8mmol/L, 30ml (other values available)
GMRD-021	Uric acid reagent kit, 70 analyser cycles incl. 0.6mmol/L standard
GMRD-084	Cholesterol reagent kit, 50 tests, incl. 5.2mmol/L standard
GMRD-090/093/092	Lactate reagent for intact whole bood - 100, 250 and 1000 analyser cycles respectively, including 8.0mmol/L standard
GMRD-100/103/102	Lactate reagent for lysed whole bood - 100, 250 and 1000 analyser cycles respectively, including 8.0mmol/L standard
GMRD-113	Alcohol reagent kit, 70 analyser cycles
GMRD-110(100)	Alcohol standard, 100mg/dl, 4 x 1ml (other values available)
GMRD-130	3-hydroxybutyrate reagent kit, 20-45 tests, incl. standard
GMRD-140	Pyruvate reagent kit, 20-40 tests, incl. standard
GMRD-150	Glutamine reagent kit, 50 tests, incl. standard
GMRD-162	Ammonia reagent kit, 20-40 tests, incl. standard
GMRD-170	Creatinine reagent kit, 40-80 tests, incl. standard
GMRD-177	Glycerol reagent kit, 140 analyser cycles, incl. standard
GMRD-180	Acetoacetate reagent kit, 20-40 tests, incl. standard
GMRD-195	Triglycerides reagent kit, 140 analyser cycles, incl. standard

Specialised Blood collection systems and accessories are available