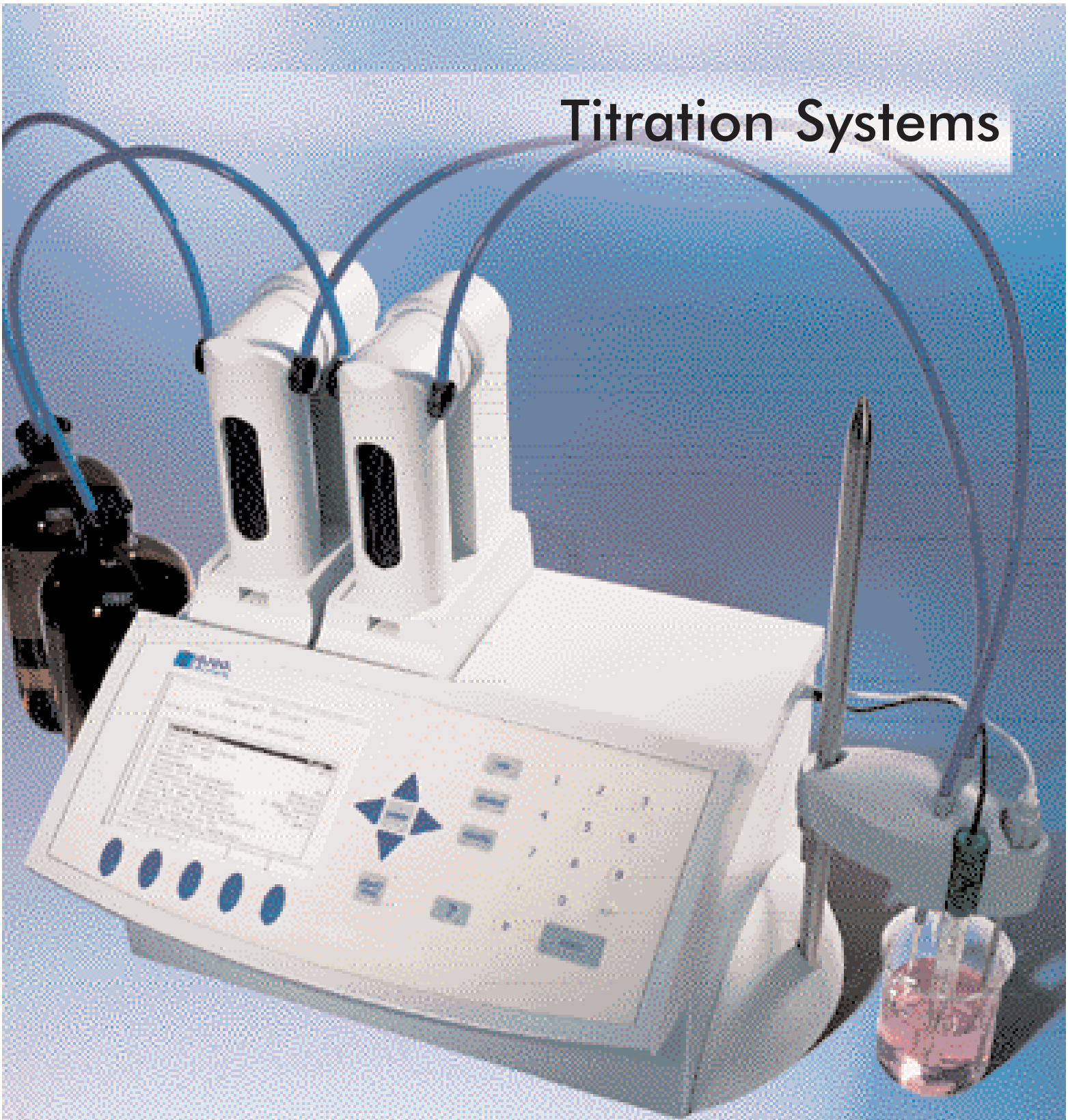
Titration Systems



Titration: Some History

In 1855, the German chemist, Friedrich Mohrn, defined titration as the "weighing without scale" method, because this process allows determination of the concentration of a sample without using complex instrumentation.
A manual titration requires high accuracy and precision, both in the preparation of the material, and the use of different precisely dosed reagents. The operation must be repeated at least 3 times to obtain a reliable measured value. This procedure makes the manual analytical technique very long and fastidious.
On the other hand, the infinite applications that titration presents, can't be neglected, both for the organic and inorganic parameters. In some applications, for example in the food industry, the determination of the content of sulphur dioxide in must and wine, and the level of acidity in cheese are still determined manually using the Soxhlet method. See the table below for other applications.

Applications

Food Industry	Acidity	**Water Analysis**	pH
	Chloride		Conductivity
	pH		Alcalinity
	SO_2 free and total		Chloride
	Sugar		Hardness
	Peroxide		COD
	Fatty Acids		Sulfate
	Vitamine C		Ammonia
	Acetic Acid		Fluoride
	Relative Humidity		Nitrate
Petrochemical	TAN	**Chemical Products**	NaOH
	TBN		KOH
	Br_2 Index		Carbonate
	Chloride		Ca^{2+}, Mg^{2+}
	Sulphide		Heavy Metals
	Mercaptan		Ag^{+}
Pharmaceutical	Titration with $HClO_4$	**Plating Industry**	Ag^{+}
	Ca^{2+}, Mg^{2+}		Ni^{2+}
	Carbonate		Zn^{2+}
	Enzymatic Determinations		Cr^{3+}, Cu^{2+}, etc

Titration, moreover, can be of different types: potentiometric, amperometric, spectrophotometric, etc., depending on the properties of the monitored system. The growing need for faster results, has lead HANNA instruments® to develop the new titrators HI 901 and HI 902, two instruments that permit the automation of the titration procedures, while providing quick and reliable data.