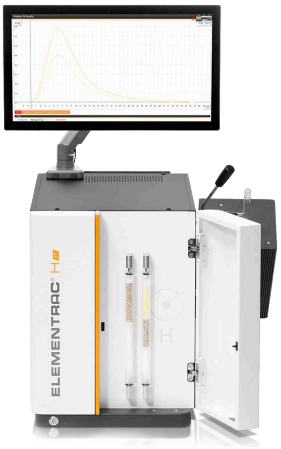
ELTRA®
a VERDER company

ELEMENTRAC H-R

Hydrogen Analyzer

The ELEMENTRAC H-r uses the hot extraction method for the reliable and precise determination of hydrogen in small dimensioned metals based samples like steel or iron. For this purpose the ELEMENTRAC H-r utilizes a resistance heated quartz tube furnace which can be set up to maximum temperature of 1100 °C in combination with a powerful wide range TCD.

The ELEMENTRAC H-r is easy to use, requires only rudimental maintenance and is operated by the user-friendly ELTRA ELEMENTS software.



PRODUCT ADVANTAGES

- Resistance furnace with 13 mm inner diameter for analysis of medium and small sized samples
- Suitable for analyzing steel samples for diffusible, residual, or total hydrogen
- Maximum temperature of 1100 °C
- Robust design allows use in both production control and laboratory environments
- Easy calibration with standard materials or integrated gas dosing
- Precise measurements even in the lower ppm concentration range

APPLICATION EXAMPLES

alloys, copper, steel

FUNCTIONAL PRINCIPLE

Operation of the ELEMENTRAC H-r is fast, safe and easy. After weighing of the sample on a connected balance the weight is transferred to the user friendly ELEMENTS software. Of course a manual application of the sample weight is also possible.

After the logging in, the sample can be placed in the cold zone of the furnace. After starting the analysis, the furnace is rotated upwards for the sample to fall into the hot zone where the sample releases its embedded hydrogen which is subsequently measured with the wide range thermal conductivity cell. Due to the application of selected temperatures also the measurement of different fractions (e.g. diffusible hydrogen) may be possible.

Depending on the applied sample mass and applied settings in the application the measurement requires 1 up to 15 minutes. After finishing of the analysis the released hydrogen amount is calculated by the software und the result could be exported as pdf, csv, txt file or via LIMS.

Calibration of the ELEMENTRAC H-r can be done via gas calibration, certified reference materials or primary substances like TiH_2.

ELEMENTRAC H-R

TECHNICAL DATA

Measured elements	hydrogen
Samples	metals, steel
Furnace alignment	horizontal / tilting function
Furnace	resistance furnace with quartz tube, adjustable up to 1100 °C (operating temperature 900 - 1000 °C)
Detection method	thermal conductivity
Combustion tube diameter	ø 13
Maximum sample size	ø 11 x 60 mm
Typical analysis time	3 - 15 min (depending on sample mass and analysis settings)
Chemicals required	Schuetze reagents, magnesium perchlorate, sodium hydroxide
Gas required	Optional for the integrated gas calibration unit: Helium 99.995 % (2 - 4 bar / 30 - 60 psi)/ nitrogen 99.995 % pure (2 - 4 bar / 30 - 60 psi)
Power requirements	230 V, 50/60 Hz, 2 A, max. 450 W
Required equipment	PC, monitor, balance (resolution 0.0001g)
Optional accessories	carrier gas purification furnace

www.eltra.com/hr

ORDER DATA

ELEMENTRAC® H-R

(Please order PC, monitor, balance and consumables (starter-kit, anhydrone, sodium hydroxide, schuetze reagent) separately)

		Measuring ranges at 1,000 mg sample weight **2)**
88200-4501	H-r (ID tube: 13 mm)	0.01 – 1,000 ppm H
88200-4500	H-r XXL (ID tube: 34 mm)	

REQUIRED ACCESSORIES

PC, MONITOR, BALANCE	
71015-1000	Computer with Intel Core i5-8400 Processor, 256 GB SSD; 8 GB RAM; Windows 10 operating system; keyboard; mouse
88400-0584	Monitor, TFT (23.8")
88400-0645	Balance (resolution 0.0001 g)

REQUIRED CONSUMABLES / CHEMICALS FOR FIRST OPERATIONS

90200		Anhydrone (magnesium perchlorate), 454 g 1)
90210		Sodium hydroxide, 500 g 1)
90270		Schuetze reagent, 100 g 1)

FURTHER OPTIONS AND CONSUMABLES

ACCESSORIES (HARDWARE)	
88200-9000	Carrier gas purification furnace, without filling (please order filling and quartz wool separately)
88400-0610	Barcode scanner
72080	Nitrogen regulator, 1 piece

CHEMICALS (FILLINGS FOR GLASS AND QUARTZ TUBES)

90200		Anhydrone (magnesium perchlorate), 454 g 1)
90210		Sodium hydroxide, 500 g 1)
90270		Schuetze reagent, 100 g 1)
90426-1001		Filling for carrier gas purification furnace (suitable for one filling)
90332		Glass wool, 50 g
92610		Tube of high vacuum grease, 35 g

SPATULAS, TWEEZERS, SPOONS AND TONGS

88400-0229		Tweezers (160 mm), curved, 1 piece
88400-0472		Tweezers (145 mm), straight, 1 piece
88400-0475		Set with 6 spatula and 1 tweezers, for multiple weighing procedures

TOOLS FOR STORAGE, TRANSPORTING AND WEIGHING

36121		Quartz boat, 74 x 22 x 10 mm, 1 piece, for weighing pins
88400-0477		Weighing boat, 1 piece, for weighing and usage of granulates

TOOLS FOR MAINTENANCE

71010		Brush, 16 mm, 1 piece, for cleaning balance from dust
88400-0473		Powder funnel (plastics), 1 piece, for easy filling of chemical tubes

88400-0489		Rubber plug 14 x 20 x 24 mm, 1 piece, for sealing small glass tubes like 88400-0006
88400-0490		Rubber plug 29 x 35 x 30 mm, 1 piece, for sealing big glass tubes like 09090
88600-0027		Sodium hydroxide, Anhydrone filter tube

CALIBRATION MATERIALS

Calibration materials may show slight variations depending on the current lot.
To see the current certification please visit www.ELTRA.com.

91110		Steel, 100 balls, gold plated, 1 g each, >1.9 ppm H