UPC MARATHON NITREX

# H2SMART™ INTELLIGENT HYDROGEN SAMPLING SYSTEM

## FOR NITRIDING AND NITROCARBURIZING

The H2Smart<sup>™</sup> is an integrated sampling system designed to measure hydrogen content with high accuracy in nitriding and nitrocarburizing atmospheres and to calculate the parameters necessary for process control.

Its unique measuring cell design and advanced electronics eliminate the need for a reference gas cell, thus simplifying the installation and usage. Moreover, the measuring cell is maintained at a set temperature to protect the system from condensation and contamination during nitrocarburizing and post oxidation processes. An integrated sampling pump with variable output insures reliable flow through the measuring cell. The sampling flow is continuously measured via an integrated mass flow meter, and, if necessary, the flow is adjusted by changing the pump output. In this manner, the closed-loop flow control assures reliable H<sub>2</sub> measurement and thus accurate nitriding and nitrocarburizing control.

H2Smart™ is available in 3 options: Base for % H<sub>2</sub> measurement, LT includes Base capabilities plus simplified KN calculation, and the premium version PRO includes LT capabilities plus extended calculation of pH2, pNH3, pO2, pCO, pCO2,  $K_{_{\rm N^\prime}}$  KC, KO and % dissociation. The Base and LT options are field upgradable.

## **ADVANTAGES**

- → High accuracy and repeatability
- → Retrofittable on existing equipment or new installations
- → Built-in communication devices interface with process supervisory and automation systems
- → Built-in Ethernet connections
- Remote Diagnostics/Troubleshooting possible
- Active closed-loop sampling flow control with warning & alarm
- System status displayed on a large, easy to read LCD display



### FEATURES AND BENEFITS

- → Built-in electronic control for reading and calculating atmosphere parameters
- → Built-in variable output sampling pump
- Digital signal processing
- → Polynomial linearization
- → Digital display (%H₂ or dissociation, sampling flow)
- → Two analog outputs (%H<sub>2</sub> and sampling flow value)
- → One analog input (Sampling line temperature sensor)
- → Two digital inputs (Enable sampling; Spare programmable)
- → Four digital outputs (Sampling flow alarm; Sampling pump saturation warning; PWM signal for sampling line temperature control; reserved)
- → Standard communication: Modbus TCP I/P
- → Optional communication: Profibus, Modbus RTU,
- → Integrated Web Server Diagnostics/Troubleshooting software for Windows® via Ethernet or serial interface
- → Optional dual input card required for AMS 2759/12 compliance:
  - → high impedance input for oxygen probe signal (mV)
  - oxygen probe thermocouple input

sales.na@upc-marathon.com

**CHINA** 

## **UPC-MARATHON**

A NITREX COMPANY

## **H2SMART™**

SPECIFICATIONS			
POWER REQUIREMENTS	2.5 Amps max.@ 24 VDC		
OUTPUTS	2 x analog, sourcing, individually isolated, 4 -20 mA (R<500 Ohm) 4 x digital OUT, 24 VDC, 0.7 A max.		
INPUTS	1 x analog, dedicated temperature sensor (optional) 2 x digital, 24 VDC		
WEIGHT	8.8 lb / 4 kg		
DIMENSIONS	7.5" H x 6.7" W x 5.5" D 190 H mm x 170 mm W x 140 mm D		
PERFORMANCE			
ACCURACY	+/- 0.5% of reading plus +/- 0.3% of full scale		
LINEARITY	< 0.5% of full scale		
REPEATABILITY	< 0.5% of full scale		
ZERO DRIFT	< 0.5% of full scale per month		
SAMPLING FLOW	0.5 lpm / (1 cfh) controlled		
RESPONSE TIME	95% in 30 sec @ 0.5 lpm / (1 cfh)		

## **FACTORY CALIBRATION**

H2Smart<sup>™</sup> comes factory calibrated and is ready to use out of the box. To prolong its performance and ensure continued measurement accuracy, we recommend an annual factory calibration complete with certificate.

FEATURES	OPTIONS		
FEATURES	Base	LT	PRO
% H <sub>2</sub> MEASUREMENT	•	•	•
SIMPLIFIED K <sub>N</sub> CALCULATION*		•	•
FULL K <sub>N</sub> , K <sub>C</sub> , K <sub>O</sub> , CALCULATION**			•
MODBUS TCP/IP	•	•	•
PROFIBUS, MODBUS RTU OR CAN BUS			
O <sub>2</sub> PROBE (FNC OPTION)			
PLATE ASSEMBLY			
CHART RECORDER			

- Standard □ Optional
- Simplified K<sub>N</sub> Calculation for NH<sub>3</sub> and dNH<sub>3</sub> atmopheres only
- \*\* Full  $K_{N'}$ ,  $K_{C'}$ , or  $K_{C'}$  Calculation for NH $_{3'}$ , dNH $_{3'}$ , CO, CO $_{2'}$ , N $_{2'}$  and H $_{2}$ O atmospheres

## INTEGRATED WEB SERVER

H2Smart™ Integrated Web Server is an integral software component of the H2Smart™ used to connect, monitor, and modify the internal configuration of the unit including sensor values, pump flow, communication parameters, flow inputs, atmosphere flow inputs and much more.

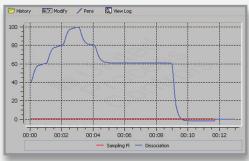


Main screen of the H2Smart™ Integrated Web Server

## OTHER OPTIONS

#### **Chart Recorder**

The chart recorder is an easy to use program set up to the customer's application and lets the user monitor and record real-time readings of process parameters over an Ethernet network. It logs data in standard formats for use in a spreadsheet or SCADA.



### Plate Assembly

The H2Smart™, electrical junction box, and filter are provided pre-wired and pre-assembled on a high-grade steel mounting plate, ensuring fast and reliable installation to a wall or panel.

