Adixen Sensistor
MARKETING INFORMATION BULLETIN
No 002 – September 2007

For internal use.

Short facts about
Extrima® Hydrogen Leak Detector

Mikael Ekström. Updated September 05, 2007

1. Description

- Extrima® is an intrinsically safe hydrogen leak detector (Ex) for use in hazardous environments. Extrima® has the European

Ex ia IIC T3

classification equivalent to US Class 1, Div 1, groups A,B,C,D, which means that it meets the requirements for use in zone 0 according to the ATEX directive (ATmosphère EXplosible) of the European Commission. This is one of the toughest levels.

Extrima also has another code, **II1G,** which clarifies the type of areas the instrument may be used in. The full code sequence is sometimes seen as

II1G Ex ia IIC T3

The most important aspect of these codes is that the Extrima cannot be used in the following situations:

- In mines
- Where explosion risk due to dust exists
- Where present gases with ignition temperature below 200°C / 392°F exists.

- Extrima® can be applied for quick and precise leak detection within the chemical and petrochemical industry as well as in the aviation and oil processing industries.
- Extrima® has an Auto-Ranging function, which automatically tunes the instrument's sensitivity for precise leak location. After a leak is located and the search for additional leaks continues, the sensitivity automatically readjusts to the highest level.
- Extrima® has a Combined–Mode on the display allowing both Detection Mode and Analaysis Mode to be shown at the same time, when activated by the Hand Probe push button.
- Extrima® is robust, simple to operate, maintenance free, water-proof (IP67), battery operated (about 5 hrs autonomy down to 0°C, 32°F).
- Unique Injection Pads (consumable) have been developed for easy injection of tracer gas into aircraft fuel tanks.
- The brand new, ergonomic hand probes, PX50 and PX50 Flex, are painted with a kerosene resistant paint, which is important for aerospace customers.
- AP–probes (AP55, AP57, AP29, AP33) cannot be used with Extrima.
- Weight about 5 kgs, (11lbs).
- A yearly service is recommended.

2. Prices

Product

Extrima Leak Detector, includes: Detector, PX50 Hand Probe, CX21 Probe Cable 3m, Battery Charger, Shoulder Strap, Transport Case, User Manual	€ 19700	partno: AS90600

Accessories

Injection Pads Small (60mm) x 10	€ 270	partno: AS90615
Injection Pads Large (150mm) x 10	€ 340	partno: AS90616
PX50 FLEX Hand Probe (flex. neck)	€ 1700	partno: AS90611
Antistatic Sensor Caps (x50)	€ 120	partno: AS90270
Water protective tape	€ 4,80	partno: AS100131
Serial cable adapter	€ tba	partno: tba
CX21 Probe cable 5 m	€ 390	partno: AS90265
Standard service Extrima	€ 1100	partno: AS85210

Spare parts

PX50 Hand Probe (standard neck)	€ 1600	partno: AS90610
PX50 FLEX Hand Probe (flex. neck)	€ 1700	partno: AS90611
Sensor for PX50	€ 480	partno: AS500118
Battery charger	€ 375	partno: AS135379
CX21 Probe cable 3 m	€ 350	partno: AS90260
Shoulder strap	€ 75	partno: AS135420

3. Availability

The Extrima can be ordered as from now. First deliveries will take place starting in September, 2007. The first production batch will be allocated for demos and live tests. The standard lead time is 6–8 weeks.

4. Sales material

Brochure update: Attached is a pdf of the brand new version of the brochure in English. Other language versions to follow. Paper copies can be ordered at **mail@sensistor.se** specifying language and quantity required. The new versions contains minor but important technical changes. Special attention is drawn to the fact that the classification **has changed from T4 to T3**. Please DO NOT use older versions of the brochure with the classification mentioned as T4.

User Manual: To come.

Pictures: A limited number of pictures based on an early prototype are available. New pictures to come. Pictures can be provided after agreement from **mail@sensistor.se**

PP presentations: PP Extrima and PP ATEX to come. PP Aircraft Fuel Tanks attached

5. Please note…

Service:

We recommend all users of Extrima to submit their unit(s) for yearly service and check–up. This service will ensure that the unit conforms to the EX approvals and the performance is according to specification.
Service comprises (materials included):
– sensor change incl calibration*
– battery test
– function test
– IP–test (IP=Ingress Protection)
– cleaning
– seal change
– calibration

*This calibration does not replace the need for the user to calibrate the unit at regular intervals. We recommend a calibrated leak for this purpose. Also see chapter 7.

All service on the Extrima during 2007– 2008 will be performed at Adixen Sensistor in Linköping, Sweden, only.
Service cost does not cover damages.

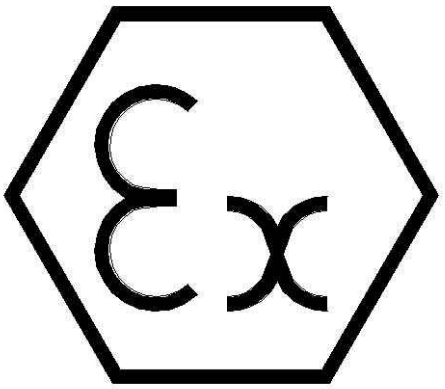
Outer damage:

It is important that the customer is informed about the fact that, should outer damage occur, it is imperative that the unit is shipped for repair. The outer box serves as protection for the electrical circuits inside. If the box is compromised it may mean that the unit no longer conforms to the ATEX standards.

Water protective tape:

The water protective tape should be used in instances where there is a risk of getting fluids into the sensor filter. The tape is applied around and over the sensor effectively stopping fluids from entering and blocking the filter. In case you get kerosene (Jet fuel) on the tape we recommend immediate change of the tape, as the kerosene will stay in the tape and create a barrier that stops the hydrogen from getting into the sensor. In case you get water on the tape it is sufficient to just give it a shake or even better dry the water off, and you can continue your leak locating.

6. ATEX Training /Certification



The following sales people have been selected and will undergo ATEX certification. It is part of the total ATEX certification to ensure and document the ATEX competence in the sales network. Therefore it is imperative that anyone selling the Extrima knows what ATEX stands for.

It is the responsibility of the person selling Extrima to inform the customer about what the Extrima ATEX certification stands for, when it is applicable, when it is NOT applicable etc. But remember – it is always the responsibility of the user to use the Extrima according to its certification.

1) Amos Lu (Alcatel Vacuum Technology Taiwan)
2) Christoph Wolf (Alcatel Hochvakuum Technik GmbH)
3) Daeyi Jeon (Alcatel Vacuum Technology Korea)
4) Jason Wong (Alcatel-Lucent Singapore)
5) Jun Rui (Alcatel Vacuum Technology Shanghai)
6) Kris Haran (Alcatel Vacuum Technology UK)
7) Mauro Cavazzoni (Alcatel Vacuum Systems S.p.a)
8) Mikael Ekström (Adixen Sensistor AB)
9) Niklas Rengfors (Adixen Sensistor AB)
10) Rajat Sabharwal (Alcatel Vacuum Technology India)
11) Rich Mizia (Alcatel Vacuum Products)
12) Ron van Vossen (Alcatel Vacuum Technology Netherlands)
13) Shin Kokido (Alcatel-Lucent Japan)
14) Thierry Feuillet (Alcatel Vacuum Technology France)
15) Tobias Schappeler (John Morris Scientific Pty Ltd)
16) Noriyuki Matsubara (F&A Technology, Japan)
17) Melvin Loh (Alcatel-Lucent Singapore)

Place/date for the training will be communicated as soon as possible.
NB: Not being on this list does not mean you have been forever excluded for ATEX certification. It's just a first batch, and more people will be able to undergo the ATEX test as needs arise.

7. Demo kit

The demo unit Extrima is a standard Extrima but with an attractive price tag.

Name: EXTRIMA demo unit

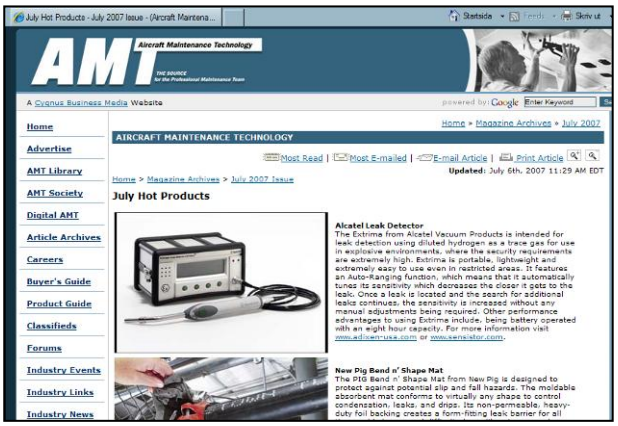
Partno: AS90601

We also recommend the following parts as part of your complete demo kit:

Name	quantity	partno	list price €
Injection Pads Small (60mm) x 10	1	AS90615	270
Injection Pads Large (150mm) x 10	1	AS90616	340
Antistatic Sensor Caps (x50)	1	AS90270	120
Water protective tape	1	AS100131	4,80
PX50 FLEX Hand Probe (as spare&demo)	1	AS90611	1700
Probe Cable 3m (as spare)	1	AS90260	350
Sensor for PX50 (as spare)	1	AS500118	480

Please note:
We also recommend you to have a reference leak (suggest Reference Leak Type C, AS90422, €1014) to be able to demonstrate calibration of Extrima.

8. How to start sales & marketing



Adixen Sensistor has already started marketing the product by:
– showing the product at Aerospace Testing Expo, Munich, March 07
– ad and press release published in Aerospace Testing Magazine June 07
– article in Aerospace Testing Magazine in September 2007
– ad in Process Nordic magazine (Scandinavia) in September and November 07
– press release in IEN (International Environment Technology September 07)
– various appearances on application or ATEX related websites
– undergoing 3 major test projects for Air National Guard (USA), Armée de l'Air (France) and Lufthansa Technik. From these 3 projects we expect to derive a lot of experience and reference material.

a) Target groups:
   I. aerospace (fuel systems)
   II. hydrogen energy (ex. fuel cells)
   III. chemical and petrochemical industry (ex. valves connectors, seals)
   IV. power (ex. hydrogen cooled generators)

b) Extrima ad can be ordered from **mail@sensistor.se**

c) Extrima press release (English) can be ordered from **mail@sensistor.se**

d) A typical quotation for an Extrima instrument could contain the following:

I. Extrima Leak Detector *€ 19700* *partno: AS90600*

II. Sensor for PX50 Hand Probe *€ 480* *partno: AS500118*
Reason: It is always good to have a spare sensor. Replacing a bad sensor is done by the operator in a matter of seconds. This means you will have no stop/delay during your leak detection task.

III. Reference leak with size similar to the leaks the user will be looking for. (for part numbers, prices and flows see Adixen Sensistor price list 2007)
Reason: A reference leak is a good way to calibrate the detector. This is imperative if the user intends to measure with the detector (Analysis Mode). But the reference leak can also serve as a function check for users that are only interested in locating leaks (Detection Mode). The function check will tell the user that the sensor is indeed good enough for finding the leaks. If the leak detection is performed in a wet environment you always run the risk of clogging the probe tip filter with fluid. A

function check prior to leak detecting will ensure that you are not detecting with a blocked filter (ie getting no signals). Calibration and function checks must always be performed outside the EX area.

IV. Antistatic Sensor Caps (x50) € 120 partno: AS90270
Reason: The Antistatic Sensor Cap, which is disposable, is both for avoiding getting oil and dust into the fixed sensor filter, but also for protecting the test object from scratches. The Sensor Caps do NOT water protect the sensor.

V. Water protective tape € 4,80 partno: AS100131
Reason: The Water Protective Tape, easily permeable for hydrogen, effectively stops water from entering the fixed sensor filter if properly applied. It will also stop jet fuel from entering, but jet fuel may block the tape in which case you will need to replace the tape with new tape.

VI. Service. It should be clear to the receiver of the quotation that we recommend a yearly service. Read more about this under section 5 in this document.
Standard service Extrima € 1100 partno: AS85210

This is an example of a basic quotation. If you have questions regarding this or the other Extrima products please do not hesitate to contact us at support@sensistor.se

9. Sensistor non–ATEX instruments already in use in Extrima target groups

Airbus	France Germany UK	assembly, galley cooling system A340 assembly, galley cooling system assembly, wing tanks A400M
Admotec Precision	Switzerland	encoders (for use on flaps)
Bombardier	Canada	assembly, fuel system CRJ
Britax Sell	Germany	galley assembly
Eaton Aerospace	Germany	hot air ducts, fuel ducts
Eurocopter	Germany	maintenance, fuel system NH90
EADS	Germany Germany	assembly, fuel system Eurofighter maintenance, fuel system Tornado
SAAB	Sweden	assembly, oxygen system Gripen
S.A.B.C.A.	Belgium	maintenance, fuel system F16
Marshall	UK	maintenance, extra fuel tanks Boeing
Parker Stratoflex	USA	manufacturing, hoses
Volvo Aero	Sweden	assembly, engine parts

10. Ongoing trials

There are 3 major live trials ongoing for the Extrima. They take place in the USA, France and Germany and cover both military and civil aircraft maintenance. The purpose has been to get some early references, but also to gather information about the performance of Extrima to use in sales situations and also for product development and product improvements. The details about these tests cannot be made public but still a few very important and striking things can be said:

a) tests have shown that using Extrima can cut the average time spent on leak fixing on a fighter jet by more than 50% ! (identifying, locating, repairing)

b) tests have proven that using Extrima allows the leak detection to be performed by one (1) operator instead of two, which is the normal situation (One guy holding the tracer gas/compressed air hose and one guy looking for the leak). This has been made possible by the introduction of the Injection Pads.

c) tests have shown that after using Extrima the number of leak repaired aircraft that STILL leak after re–fuelling can be cut down to zero!

Below you will find an excerpt from an interview by www.f–16.net, interviewing MSgt James J. Olschlager (Ret.) who has 21+ years of experience of maintenance of military aircraft.

> **F-16.net:** *What is the hardest thing about working on the F-16?*
>
> **James:** Has to be fuel leaks! As a pro super those were my worst nightmare especially here in Las Vegas with the extreme temperature changes.

Over 4000 F16's has been built since 1976, exported to 24 countries.

11. Questions

If you have any further questions please do not hesitate to contact **mikael.ekstrom@sensistor.se, +46-13 355 920** or use **mail@sensistor.se** .