



1 EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use
in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX2301X**

4 Equipment or Protective System: **ADVENT HAND TACHOMETER TYPE A2109**

5 Manufacturer: **COMPACT INSTRUMENTS LTD**

6 Address: **Bolton, Lancashire, BL3 2AB**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

99(C)0950 dated 3 September 2001

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2

EN 50020: 1994

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

⊕ II 2 G EEx ia IIC T4

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 4099/02/001

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



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I M CLEARE
DIRECTOR
10 September 2001



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Schedule

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Description of Equipment or Protective System

The **Advent Hand Tachometer Type A2109** is a hand held instrument designed to measure the speed of rotating shafts. It produces either an optical beam using photo diodes or a laser beam using laser diodes. The reflection of the beam from a reflective surface on a rotating shaft is detected by a sensor in the Tachometer. Tachometer may be used with a contact adapter fitted to the front which is held against a rotating shaft. The contact adapter has a permanent magnet that rotates to produce a rotating magnetic field which is sensed by the instrument.

The Tachometer contains electronic components and an LCD display mounted on a printed circuit board (pcb). The instrument is internally powered using 4 x Duracell size AAA alkaline cells. The electrical components are enclosed in a chrome plated plastic housing with separate compartments for the pcb and the battery. The instrument has a transparent window for the display and the battery compartment is fitted with a cover which is secured using anti-tamper fixing. The Tachometer has an optional **Rear Plug** to which external diagnostic instruments may be connected.

The Type number may be suffixed with various characters to signify the following variants:-

A2109/LSR/** Laser output

A2019/LED/** LED output

*** is replaced by 002 when Tachometer fitted with a 5 pin rear plug

*** is left blank when Tachometer not fitted with a rear plug

Input Parameters

At the **Rear Plug** Pin 4 w.r.t. Pin 3:

$$U_i = 10.1V$$

Output Parameters

At the **Rear Plug** Pin 4 w.r.t. Pin 3:

$$U_o = 6.6 V$$

$$I_o = 0.3 mA$$

$$P_o = 0.43 mW$$

$$L_o = 700 mH$$

$$C_o = 22 \mu F$$

$$L_o/R_o = 68 mH/\Omega$$

$$L_i = 0$$

$$C_i = 0$$



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At the **Rear Plug** Pin 1 w.r.t. Pin 2:

$$U_o = 6.6 \text{ V}$$

$$I_o = 463 \text{ mA}$$

$$P_o = 0.63 \text{ W}$$

$$L_o = 0.17 \text{ mH}$$

$$C_o = 22 \text{ } \mu\text{F}$$

$$L_o/R_o = 49 \text{ } \mu\text{H}/\Omega$$

$$L_i = 0$$

$$C_i = 2.245 \text{ } \mu\text{F}$$

16 **Report No.**

99(C)0950

17 **Special Conditions For Safe Use**

Tachometer fitted with a contact adapter presents a potential risk of frictional ignition and must not be used continuously for more than 10 seconds.

18. **Essential Health and Safety Requirements**

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by standards listed in Section 9		
Clause	Subject	Compliance
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 99(c)0950 Clause 5.1.1.3
1.2.2	Components for incorporation or replacement	Report No 99(c)0950 Clause 5.1.2.2
1.2.5	Additional means of protection	Report No 99(c)0950 Clause 5.1.2.5
1.2.7	Protection against other hazards	Report No 99(c)0950 Clause 5.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 99(c)0950 Clause 5.1.4.2



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DRAWINGS

Number	Issue	Date	Description
P0474	1.2	07.08.01	General assembly
P0477	1.2	07.08.01	Contact Adaptor
P0475	1.2	07.08.01	Chrome masking base details
P0476	1.2	07.08.01	Chrome masking top details
P0478	1.1	07.08.01	Labelling
001284	1.1	07.08.01	Label details
P0479	1.1	07.08.01	PCB Subassembly with LED
P0472	1.2	07.08.01	PCB Subassembly with LSR
P0473	1.2	07.08.01	PCB component layout
C001015	1.2	30.08.01	Circuit
001285	1.1	07.08.01	PCB track layout

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1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

- 3 Supplementary EC - Type Examination Certificate Number: **BAS01ATEX2301X/1**
- 4 Equipment or Protective System: **Advent Hand Tachometer Type A2109**
- 5 Manufacturer: **Compact Instruments Ltd**
- 6 Address: **Mikar Business Park, Northolt Drive, Bolton, Lancashire, BL3 6RE**
- 7 This supplementary certificate extends EC – Type Examination Certificate No. BAS01ATEX2301X to apply to equipment or protective systems designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa, Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

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Baseefa Customer Reference No. **4099**

Project File No. **10/0188**

This certificate is granted subject to the general terms and conditions of Baseefa. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

Baseefa

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Baseefa is a trading name of Baseefa Ltd
Registered in England No. 4305578. Registered address as above.

A handwritten signature in blue ink, appearing to read "R/S Sinclair".

R/S SINCLAIR
DIRECTOR
On behalf of
Baseefa



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Certificate Number BAS01ATEX2301X/1

15 Description of the variation to the Equipment or Protective System

Variation 1.1

To permit the use of a static-dissipative acrylic coating on the enclosure.

Variation 1.2

To permit:

- the use of an alternative type of plastic for the enclosure. The plastic is static dissipative and does not form a potential electrostatic ignition hazard.
- minor drawing changes which do not affect the original assessment.

16 Report Number

None.

17 Special Conditions for Safe Use

None additional to those listed previously.

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
001284	1 of 1	1.2	24.11.09	A2109 Label Details
P0472	1 of 1	1.3	24.11.09	A2109 / LSR PCB Assy Detail
P0474	1 of 1	1.3	24.11.09	A2109 Advent I.S.
P0475	1 of 1	1.3	08.03.10	A2109 Advent I.S. Chrome Masking Base Detail
P0476	1 of 1	1.3	08.03.10	A2109 Advent I.S. Chrome Masking Top Detail
P0477	1 of 1	1.3	24.11.09	A2109 Contact Adapter Assy
P0478	1 of 1	1.2	24.11.09	A2109 Case Label Details
P0479	1 of 1	1.2	24.11.09	A2109 / LED PCB Assy Detail