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 – Issue 3**

4 Equipment or Protective System: **Advent Hand Tachometer Type A2109**

5 Manufacturer: **Compact Instruments Limited**

6 Address: **61-65 Lever Street, 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 Baseefa, Notified Body number 1180, 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 No's. **15(C)0406**

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

EN 60079-0:2012 EN 60079-11:2012 EN 60079-28:2007

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. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

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

(Ex) II 2G Ex ia op is IIC T4 Gb

Baseefa Customer Reference No. **4099**

Project File No. **15/0406**

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R S SINCLAIR pp Allan Cooper
GENERAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS01ATEX2301X – Issue 3**

15 **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. The 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 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 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
$C_o = 22$ µF
$L_o/R_o = 68$mH/Ω
$L_i = 0$
$C_i = 0$

At the Rear Plug: Pin 1 w.r.t. Pin 2:
$U_o = 6.6$ V
$I_o = 463$ mA
$P_o = 0.63$ mW
$L_o = 0.17$ mH
$C_o = 22$ µF
$L_o/R_o = 49$mH/Ω
$L_i = 0$
$C_i = 2.245$µF

16 Report Number

15(C)0406

17 Specific Conditions of Use

1. The 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

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
001284	1 of 1	1.4	27-05-15	A2109 Label Details
P0478	1 of 1	1.4	27-05-15	A2109 Case Label Details

20 Certificate History

Certificate No.	Date	Comments
BAS01ATEX2301X	10 September 2001	The release of the prime certificate. The associated test and assessment against the requirements of EN 50014:1997 + Amds 1 & 2 and EN 50020:1994 is documented in Test Report No. 99(C)0950.
BAS01ATEX2301X/1	22 March 2010	This issue of the certificate incorporates the use of a static-dissipative coating on the enclosure, an alternative plastic for the enclosure which is static-dissipative and minor drawing changes which do not affect the original assessment.
BAS01ATEX2301X Issue 2	30 April 2014	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current design meets the requirements of EN 60079-0:2012, EN 60079-11:2012 and EN 60079-28:2007 including the revision of the equipment marking in accordance with these standards.
BAS01ATEX2301X Issue 3	9 July 2015	This issue of the certificate incorporates the use of an alternative Industrial by Duracell Alkaline, Model: LR03, 1.5V, Size AAA batteries. The associated test and assessment is documented in Test Report No: 15(C)0406.
For drawings applicable to each issue, see original of that issue.		