



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 03ATEX2283** Issue: **3**

4 Equipment: **Advanced Density Transmitter Type 78XX**

5 Applicant: **Mobrey Limited**

6 Address: 158 Edinburgh Avenue  
Slough  
Berkshire  
SL1 4UE  
UK

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 50014:1997 plus amendments A1 and A2      EN 50020:2002      EN 50284:1999

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment 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. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 1G  
EEx ia IIB T4 (T<sub>a</sub> = -40°C to +60°C)

Project Number 52A18372  
C. Index 13

This certificate and its schedules may only be reproduced in its entirety and without change.

D R Stubbings BA MIET  
Certification Manager



**SCHEDULE**

**EC TYPE-EXAMINATION CERTIFICATE**

**Sira 03ATEX2283  
Issue 3**

**13 DESCRIPTION OF EQUIPMENT**

The Type 78xx Advanced Liquid Density Transducers are designed to provide electrical signals proportional to density and temperature of a liquid flowing in a pipeline. The apparatus comprises a platinum resistance thermometer, a drive coil, a pick-up coil, a vibrating tube and bellows housed in a metallic tube fitted with metallic flanges. Welded to the metallic tube is a metallic box containing up to two printed circuit boards. The printed circuit boards are an amplifier board and either a Switchboard or a Hart Interface Board. External electrical connections are made via an integral terminal block. Access for the cables is provided by cable glands fitted into the sides of the metallic box.

The Type 78xx series comprises the following models:

- 1 7835 Advanced Liquid Density Transducer
- 2 7836 Advanced Liquid Density Transducer
- 3 7845 Advanced Liquid Density Transducer
- 4 7846 Advanced Liquid Density Transducer
- 5 7847 Advanced Liquid Density Transducer

The models are identical in appearance and differ only in the metal of the vibrating tube, the sensitivity of the coils and the software installed in each transducer to provide differing ranges and accuracy of measurement.

Input parameters				Output parameters	
Terminal Block PL2				Hart Connector PL3	Terminals 9, 10, 11 and 12
Terminal 7 wrt 8	Terminal 1 wrt 2	Terminal 3 wrt 4	Terminal 5 wrt 6	Analogue+ or HHC+ relative to Analogue- or HHC-	
U <sub>i</sub> = 28V I <sub>i</sub> = 135mA P <sub>i</sub> = 1.16W C <sub>i</sub> = 0.03µF L <sub>i</sub> = 0.3mH	U <sub>i</sub> = 28V I <sub>i</sub> = 100mA P <sub>i</sub> = 0.66W C <sub>i</sub> = 0.03µF L <sub>i</sub> = 3.0mH	U <sub>i</sub> = 28V I <sub>i</sub> = 100mA P <sub>i</sub> = 0.66W C <sub>i</sub> = 0.07µF L <sub>i</sub> = 3.0mH	U <sub>i</sub> = 28V I <sub>i</sub> = 100mA P <sub>i</sub> = 0.66W C <sub>i</sub> = 0.07µF L <sub>i</sub> = 3.0mH	U <sub>i</sub> = 28V I <sub>i</sub> = 120mA P <sub>i</sub> = 0.66W C <sub>i</sub> = 0.07µF L <sub>i</sub> = 1.52mH	U <sub>o</sub> = 8.61V I <sub>o</sub> = 215mA P <sub>o</sub> = 1.16W C <sub>i</sub> = 3.63µF L <sub>i</sub> = 0.3mH

**Variation 1** - This variation introduced the following changes:

- i. The M37732 processor type is to be replaced by a smaller M37733 processor.
- ii. Minor track changes.

**14 DESCRIPTIVE DOCUMENTS**

**14.1 Drawings**

Refer to Certificate Annexe.

This certificate and its schedules may only be reproduced in its entirety and without change.

**Sira Certification Service**

Rake Lane, Eccleston, Chester, CH4 9JN, England

Tel: +44 (0) 1244 670900  
 Fax: +44 (0) 1244 681330  
 Email: [info@siracertification.com](mailto:info@siracertification.com)  
 Web: [www.siracertification.com](http://www.siracertification.com)



**SCHEDULE**

**EC TYPE-EXAMINATION CERTIFICATE**

**Sira 03ATEX2283**  
**Issue 3**

14.2 **Associated Sira Reports and Certificate History**

<b>Issue</b>	<b>Date</b>	<b>Report number</b>	<b>Comment</b>
0	24 July 2003	R52A9915A	The release of prime certificate.
1	08 March 2006	R51A13857A	To permit the company name to be changed. From: Solatron Mobrey Limited To: Mobrey Limited
2	14 May 2007	R51A16605A	To permit the Mobrey Logo on the product nameplate to be replaced with the "Micro Motion" Logo
3	17 June 2008	R52A18372A	This Issue covers the following changes: <ul style="list-style-type: none"><li>All previously issued certification was rationalised into a single certificate, Issue 3, Issues 0 to 2 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.</li></ul> The introduction of Variation 1.

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

None

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 **CONDITIONS OF CERTIFICATION**

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

This certificate and its schedules may only be reproduced in its entirety and without change.

# Certificate Annexe

**Certificate Number:** Sira 03ATEX2283  
**Equipment:** Advanced Density Transmitter Type 78XX  
**Applicant:** Mobrey Ltd



## Issue 0

Number	Sheet	Rev.	Date	Description
78355020	1 of 1	4	26 Jun 03	General assembly
78355068	1 of 1	2	27 Jun 03	General Assembly with Alternative PRT
78355022	1 of 6	7	03 Jul 03	Advanced Density Amp. PCB details
78355022	2 to 5 of 6	7	03 Jul 03	Advanced Density Amp. Circuit diagrams
78355022	6 of 6	7	02 Jul 03	Amplifier Board Parts List
78355024	1 of 3	6	30 Jun 03	Switch Board PCB details
78355024	2 of 3	6	30 Jun 03	Switch Board Circuit diagram
78355024	3 of 3	6	26 Jun 03	Switch Board Parts list
78335019	1 of 1	2	26 Jun 03	Hart Option
78355023	1 of 3	6	30 Jun 03	Hart Interface PCB Details
78355023	2 of 3	6	30 Jun 03	Hart Interface Circuit Diagram
78355023	3 of 3	6	02 Jul 03	Hart Interface PCB Details - Parts List
78355072	1 of 1	2	27 Jun 03	Label
78455007	1 of 1	2	26 Jun 03	General Assembly, remote electronics
78355073	1 of 1	2	27 Jun 03	Label, remote electronics

## Issue 1

No drawings were introduced.

## Issue 2

No drawings were introduced.

## Issue 3

Number	Sheet	Rev.	Date	Description
78355022	1 of 6	8	08 Apr 08	Advanced Density Amp. PCB details

This certificate and its schedules may only be reproduced in its entirety and without change.