



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 04ATEX2297** 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 IIC T4 ($T_a = -40^{\circ}\text{C}$ to $+60^{\circ}\text{C}$) - $P_i = 1.175\text{ W}$

EEx ia IIC T4 ($T_a = -40^{\circ}\text{C}$ to $+40^{\circ}\text{C}$) - $P_i = 1.275\text{ W}$

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D R Stubbings BA MIET
Certification Manager



SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The Advanced Liquid Density Transmitter Type 78XX is designed to provide electrical signals proportional to density and temperature of a liquid flowing in a pipeline. The equipment comprises a platinum resistance thermometer, a drive coil, a pick-up coil, a vibrating tube and bellows; these are all 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 a switchboard. 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 Transmitter
- 2 7836 Advanced Liquid Density Transmitter
- 3 7845 Advanced Liquid Density Transmitter
- 4 7846 Advanced Liquid Density Transmitter
- 5 7847 Advanced Liquid Density Transmitter (hygenic)

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 transmitter provide differing ranges and accuracy of measurement.

As an option, the printed circuit boards may be housed in a separate metallic enclosure forming the 78452C Remote Amplifier that is connected to TB1 of the 78XX Advanced Density Transmitter by a multi-core cable having a maximum length of 5 metres.

Input parameters Terminal Block PL2				Output parameters Terminal Block PL2
Terminal 7 wrt 8	Terminal 1 wrt 2	Terminal 3 wrt 4	Terminal 5 wrt 6	Terminals 9, 10, 11 and 12
$U_i = 28V$	$U_i = 28V$	$U_i = 28V$	$U_i = 28V$	$U_o = 8.61V$
$I_i = 190mA$	$I_i = 100mA$	$I_i = 100mA$	$I_i = 100mA$	$I_o = 190mA$
$P_i = \text{see coding}$	$P_i = 0.66W$	$P_i = 0.66W$	$P_i = 0.66W$	$P_o = \text{see coding}$
$C_i = 0.03\mu F$	$C_i = 0.03\mu F$	$C_i = 0.041\mu F$	$C_i = 0.041\mu F$	$C_i = 3.63\mu F$
$L_i = 0.3mH$	$L_i = 3.0mH$	$L_i = 3.0mH$	$L_i = 3.0mH$	$L_i = 0.3mH$

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.

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Sira Certification Service

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14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
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">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. 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.

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Certificate Annexe

Certificate Number: Sira 04ATEX2297
Equipment: Advanced Density Transmitter Type 78XX
Applicant: Mobrey Ltd



Issue 0

Number	Sheet	Rev.	Date	Description
78355037	1 of 6	1	06 Sep 04	Advanced Density Amp. PCB details
78355037	2 of 6	1	06 Sep 04	Advanced Density Amp. Circuit diagrams
78355037	3 of 6	1	06 Sep 04	Advanced Density Amp. Circuit diagrams
78355037	4 of 6	1	06 Sep 04	Advanced Density Amp. Circuit diagrams
78355037	5 of 6	1	06 Sep 04	Advanced Density Amp. Circuit diagrams
78355037	6 of 6	1	06 Sep 04	Amplifier Board Parts List
78355076	1 of 1	3	02 Nov 04	Label
78355077	1 of 1	3	02 Nov 04	Label, remote electronics
78355020	1 of 1	4	26 Jun 03	General assembly
78355068	1 of 1	2	27 Jun 03	General Assembly with Alternative PRT
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
78455007	1 of 1	2	26 Jun 03	General Assembly, remote electronics

Issue 1

No drawings were introduced.

Issue 2

No drawings were introduced.

Issue 3

Number	Sheet	Rev.	Date	Description
78355037	1 of 6	2	08 Apr 08	Advanced Density Amp. PCB details

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