National Measurement Office

UK/0126/0094

MI-001

EC type-examination certificate UK/0126/0094 Revision 2

issued by:

The National Measurement Office
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Cold-water Meters) Regulations 2006 (SI 2006/1268) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

Arad Ltd.
Dalia - Ramot Menashe
POB19239
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Israel

in respect of a family of cold-water meters, designated Octave, utilising a Ultrasonic measuring element and having a rated permanent flowrate Q3 between 40 m^3/h and 400 m^3/h.

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

This Revision replaces previous versions of the certificate.

Issue Date: 17 January 2012
Valid Until: 27 October 2020
Reference No: T1132/0026

Signatory: P R Dixon
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UKAS PRODUCT CERTIFICATION 0135

BIS Department for Business Innovation & Skills

Descriptive Annex

1 INTRODUCTION

This pattern for a family of liquid measuring instruments for measuring the volume of cold water which has passed through them. They are an ultrasonic, flanged water cold-water meter having a Q_3 (permanent flowrate) from 40 m^3/h for the 2" meter to 400 m^3/h for the 8" meter, all sizes with a Q_3/Q_1 turndown ratio of 500 (R500). An example meter is shown in Figure 1

2 FUNCTIONAL DESCRIPTION

Octave family are ultrasonic water meters which use the Transit time method. This method is based on the physical phenomena where the speed of an ultrasonic wave propagation is equal to the sum of the speed of the flow and the speed of sound of the media at rest. By measuring the time of the wave propagation of both the upstream and downstream the flow, it is possible to obtain the fluid's velocity along the acoustical beam.

3 TECHNICAL DATA

3.1 Flow designation

Table 1 Related flowrates according to meter size

Meter Size	**2"**	**2½"**	**3"**	**4"**	**6"**	**8"**
Q_3/Q_1 (R)	**500**	**500**	**500**	**500**	**500**	**500**
Q_2/Q_1	1.6	1.6	1.6	1.6	1.6	1.6
Q1 Minimum flowrate (m^3/hr)	0.08	0.08	0.125	0.20	0.5	0.8
Q2 Transitional flowrate (m^3/hr)	0.128	0.128	0.2	0.32	0.8	1.28
Q3 Permanent flowrate (m^3/hr)	40	40	63	100	250	400
Q4 Overload flowrate (m^3/hr)	50	50	80	125	313	500

3.2 Other designations

Temperature class:	T50 (0.1°C – 50°C)
Orientation requirements:	None
Maximum admissible pressure (MAP)	16 bar
Pressure Loss at Q3	0.16 bar max
Climatic environment:	-25°C to 55°C
Mechanical environment:	M1
Electromagnetic environment:	E1
Location:	Open/closed, condensing/non-condensing
Reverse Flow:	The meter may or may not measure reverse flow depending on factory set-up - this should be marked on the Data Label

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Communication modules are mounted on the Comm. output connector using two screws. One screw cover is sealed as shown in figure 2.
Output options are:

- Pulse Output Module
- 4-20mA Output Module
- AMR Output Module
- Encoder Protocol Output Module

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions.

5.1 Legends and inscriptions

The instrument bears the following legends:

'CE' marking
Supplementary metrology marking
Notified body identification number
Permanent flow rate Q_3
Flowrate range Q_3/Q_1 (R)
Serial number
Manufacturers mark or name
Certificate number

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 Securing method (figure 2)

The Octave meter has five plastic seals:

- Two seals are placed on the Sensor Cover Plates screws, one on each plate.
- Two seals are implemented on the meter Face Plate.
- One seal covers the screw of the Comm. output cover.

6.2 Software Security

The Octave Water Meter incorporates "Built for Purpose "software (Type P). Access to CPU, for software revisions, can only be done via a specific J-Tag connector on the PCB. In order to reach the PCB the meter must be disassembled:

- breaking two (2) seals,
- breaching the vacuumed Electronics Compartment.

The present software version 2.08 is shown on the data label (Figure 3).

6.2.1 Alternative Software version

Having an alternative software version, Ver. 3.15.00, which supports reverse flow measurement.

6.3 Location of verification markings

The verification markings identified in 5.1, and serial number, are permanently marked on the data label which is positioned on the face of the meter (Figure 3).

7 AUTHORISED ALTERNATIVES

7.1 2" Threaded Body Meter

Having a 2" meter with the same technical specifications as described in section 3, but with a threaded connection replacing the flanges.

8 ILLUSTRATIONS

Figure 1 Octave Meter (inc. dial face and markings)
Figure 2 Sealing
Figure 3 Data label

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0094	01 November 2010	Certificate first issued
UK/0126/0094 Revision 1	17 August 2011	Revision 1 Issued: Section 3.1; 2½" meter added Section 3.2; pressure loss corrected to 0.16 bar and reverse flow allowed. Section 6.2.1 added; alternative software version Addition of Section 7 Authorised alternatives & Section 7.1; Threaded body 2" meter added. Subsequent sections renumbered.
UK/0126/0094 Revision 2	17 January 2012	Revision 2 Issued: Front Page and section 1 maximum Q3 of 400 m^2/h added Section 3.1, Table 2, 6" and 8" meter sizes added.

Figure 1 Octave Meter

Figure 2 Sealing

Figure 3 Data Label