

# DANIEL ULTRASONIC GAS METERS

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**INSTALLATION AND OPERATING INSTRUCTIONS  
SPECIFIC TO THE PRESSURE EQUIPMENT DIRECTIVE**

**DANIEL MEASUREMENT AND CONTROL, INC.  
AN EMERSON PROCESS MANAGEMENT COMPANY  
HOUSTON, TEXAS**

**Part Number 3-9000-745  
Revision B**

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**1. Purpose**

- 1.1 This document shall identify specific installation and operation instructions necessary to ensure compliance with the Essential Safety Requirements (ESR) of the European Economic Area Pressure Equipment Directive (PED) 97/23/EC and the UK Pressure Equipment Regulations 1999 (SI 1999/2001).

**2. Scope**

- 2.1 This document applies to Ultrasonic Gas Meters (USMs) designed by Daniel Measurement and Control, Inc. (Daniel) of Houston, Texas, USA, and manufactured by Daniel or an authorized agent.

**3. Installation**

- 3.1 Daniel Ultrasonic meters are supplied as components to be installed in the end user's piping system. It is the responsibility of the end user of the equipment to ensure compliance with the Essential Safety Requirements of the Directive and Regulations quoted in paragraph 1.1 of this document. Relevant parts of the directive ESR are listed below.

## 3.1.1

PED ESR Ref.	ESR Requirement	Compliance Requirement
2.3	<p><b>Provisions to ensure safe handling and operation.</b></p> <p>The method of operation specified for pressure equipment must be such as to preclude any reasonably foreseen risk in the operation of the equipment. Particular attention must be paid, where appropriate, to the following.</p>	
2.3 contd.	Closures and openings	<p>During removal and replacement of transducers the end user shall ensure that the meter has been properly isolated and the internal pressure has been safely vented.</p> <p>If changing the transducers under line pressure by means of the Daniel supplied extractor tool; the instructions for use given in the manual supplied with each extractor tool must be strictly complied with.</p>

PED ESR Ref.	ESR Requirement	Compliance Requirement
	<p>Devices to prevent physical access while pressure or a vacuum exists</p> <p>Surface temperature</p> <p>Decomposition of unstable fluids</p>	<p>The end user shall ensure that the meters are installed in a properly designed system with access limitation in place if required.</p> <p>It is the responsibility of the end user to assess the expected surface temperature in service, and if necessary, take the necessary precautions to avoid personnel coming into contact with the equipment.</p> <p>It is not envisaged that, for the designed service, the equipment shall come into contact with unstable fluids. However, the end user should assess the risk and take any steps considered necessary.</p>
2.4	<p><b>Means of examination</b></p> <p>Pressure equipment must be designed and constructed so that all necessary examinations to ensure safety can be carried out.</p>	<p>The Daniel Ultrasonic meters are designed so that all critical parts can be examined without the need to remove the unit from service. The end user should refer to the operations and maintenance instructions supplied with each meter. It is not considered that the process medium for which the equipment is designed will give rise to severe corrosion/erosion problems. It is the end user's responsibility to monitor any change in the process medium that may cause concern.</p>
2.5	<p><b>Means of draining and venting</b></p> <p>To avoid harmful effects such as water hammer, vacuum collapse, corrosion and uncontrolled chemical reactions</p>	<p>It is the responsibility of the end user to ensure that the equipment is installed in a well-designed piping system to avoid such hazards.</p>
2.6	<p><b>Corrosion or other chemical attack</b></p>	<p>It is not expected that the process medium for which the USMs are designed will give rise to severe corrosion problems. It is the end user's responsibility to monitor any change in the process medium that may cause concern.</p>
2.7	<p><b>Wear</b></p>	<p>It is not expected that the use of the USMs for fluid metering will give rise to any abnormal wear problems. It is the responsibility of the end user to install any necessary filtration upstream of the USMs to maintain the condition of the process medium.</p>

<b>PED ESR Ref.</b>	<b>ESR Requirement</b>	<b>Compliance Requirement</b>
2.10	<b>Protection against exceeding the allowable limits of the pressure equipment.</b>	The USMs must be installed in a well-designed piping system with adequate protection against excessive pressure.
2.12	<b>External fire</b>	The USMs have no special accessories for fire damage limitation. It is the responsibility of the end user to provide adequate fire-fighting facilities on site.
7.3	<b>Pressure limiting devices, particularly for pressure vessels</b>	The USMs are not pressure vessels and have no integral pressure limiting devices. It is the responsibility of the end user to ensure that the USMs are installed in a well-designed system so that momentary pressure surges are limited to under 10% of the USMs' maximum allowable pressure.

The sales and service offices of Daniel Measurement and Control are located throughout the United States and in major countries overseas.  
Please contact Daniel Measurement Services at  
11100 Brittmoore Park Drive, Houston, Texas 77041, or phone (713) 827-6314  
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