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## PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

***Glacier Refrigerated Automatic Sampler  
Glacier Portable Automatic Sampler with Ice-pack Cooler***

manufactured by:

***Teledyne Isco Inc***

*4700 Superior Street  
Lincoln  
Nebraska  
NE 68504  
USA*

has been assessed by Sira Certification Service  
and for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Water  
Monitoring Systems, Part 1, Version 1 (Feb 2003)**

Certification Range :

Lift height 0 to 4 metres

Project No: 674/0155  
Certificate No: Sira MC 060080/03  
Initial Certification: 20 April 2006  
This Certificate Issued: 10 September 2009  
Renewal Date: 19 April 2011

Technical Director

*MCERTS is operated on behalf of the Environment Agency by*

**Sira Certification Service**

12 Acorn Industrial Park, Crayford Road, Crayford  
Dartford, Kent, UK, DA1 4AL  
Tel: 01322 520500 Fax: 01322 520501

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## Approved Site Application

The product is suitable for use on applications for compliance with the Urban Wastewater Treatment Regulations.

*Any potential user should ensure, in consultation with the manufacturer, that the water sampler is suitable for the process on which it will be installed.*

## Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

WRc report      Ref: UC 6157 dated March 2003  
WRc report      Ref: UC 6448 dated November 2003

## Product Certified

### Glacier Refrigerated Sampler

This certificate applies to all products with serial number 202F01888 (software version 3.00) onwards.

### Glacier Portable Sampler with Ice-Pack Cooler

This certificate applies to all products with serial number 203J01039 (software version 3.21) onwards.

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## Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: -10°C to +40°C

Test	Results	MCERTS specification										
Sample Collection	Flow proportional and timed sampling available Certified for use with single 10 litre composite sample bottle	Clause 4.1.1										
Sample Volume <ul style="list-style-type: none"> <li>Max discrete sample</li> <li>Storage capacity</li> </ul>	Sample volume adjustable 9990 ml stated Composite 9 litre, 10 litre or 19 litre available	Clause 4.1.2										
Sampling head <ul style="list-style-type: none"> <li>Max sampling head</li> </ul>	7.9 metres *Certified for maximum of 4 metres for 0.5 m/s sampling velocity	Clause 4.1.3										
Sample interval <ul style="list-style-type: none"> <li>Time proportional sampling</li> <li>Flow proportional sampling</li> </ul>	Sample interval range is 1min to 9999 minutes 1 min intervals is selectable 4-20mA and pulse outputs are available Facility for flowmeter pulse input. Number of pulses per sample adjustable	Clause 4.1.4										
Sample failure	Sample failures are recorded. Fault indicated on display	Clause 4.1.5										
Sample line diameter	9.52 mm	Clause 4.1.6 >9 mm										
Sample volume error	<table border="0"> <tr> <td>Systematic Errors:</td> <td>Random Errors:</td> </tr> <tr> <td>0.75% at 1m</td> <td>3.7% at 1m</td> </tr> <tr> <td>1.20% at 3.5m</td> <td>3.8% at 3.5m</td> </tr> <tr> <td>0.85% at 7m</td> <td>5.7% at 7m*</td> </tr> <tr> <td>Overall: 0.93%</td> <td>Overall: 4.31%</td> </tr> </table>	Systematic Errors:	Random Errors:	0.75% at 1m	3.7% at 1m	1.20% at 3.5m	3.8% at 3.5m	0.85% at 7m	5.7% at 7m*	Overall: 0.93%	Overall: 4.31%	Clause 4.2.1 <5% <5% <5% <5%
Systematic Errors:	Random Errors:											
0.75% at 1m	3.7% at 1m											
1.20% at 3.5m	3.8% at 3.5m											
0.85% at 7m	5.7% at 7m*											
Overall: 0.93%	Overall: 4.31%											

\*The product is certified over the range 0 to 4m

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Test	Results	MCERTS specification								
Sample line velocity	0.733 m/s at 1m sampling head 0.689 m/s at 2m sampling head 0.604 m/s at 3m sampling head 0.514 m/s at 4m sampling head 0.408 m/s at 5m sampling head*	Clause 4.2.2 >0.5 m/s >0.5 m/s >0.5 m/s >0.5 m/s >0.5 m/s								
Sample integrity	No statistically significant difference was found in analysis for BOD, COD, suspended solids, total N and total P	Clause 4.2.3								
Sample timing	2 sec	Clause 4.2.4 < ±10 sec/24h								
Ambient temperature <ul style="list-style-type: none"> <li>Sampler with sample temperature control (maintain sample between 0°C to 5°C)</li> </ul>	<table border="0"> <tr> <td>During sample period:</td> <td>24hrs after sample period:</td> </tr> <tr> <td>2.2°C at -10°C</td> <td>0.3°C at -10°C</td> </tr> <tr> <td>3.25°C at 15°C</td> <td>3.05°C at 15°C</td> </tr> <tr> <td>4.25°C at 40°C</td> <td>1-5°C at 40°C</td> </tr> </table> <p>The sample met the MCERTS requirement for the sampling period at 40°C and for a period of 13.5 hours after the completion of the sampling period, at which point the rechargeable battery was exhausted. The sampler was re-tested at 40°C with a mains power adapter and confirmed that the refrigeration unit is capable of maintaining the specified sample temperature for the full 48 hour test cycle</p> <p>It is recommended that when the sampler is operated from a rechargeable battery and deployed in conditions where the temperature may exceed 30°C for a significant period, the samples should be retrieved within a period of 13 hours from the end of the sampling period.</p> <p>Note: if a battery with a capacity of less than 100A/h is employed then the operating period will be reduced proportionally.</p>	During sample period:	24hrs after sample period:	2.2°C at -10°C	0.3°C at -10°C	3.25°C at 15°C	3.05°C at 15°C	4.25°C at 40°C	1-5°C at 40°C	Clause 4.3.1b
During sample period:	24hrs after sample period:									
2.2°C at -10°C	0.3°C at -10°C									
3.25°C at 15°C	3.05°C at 15°C									
4.25°C at 40°C	1-5°C at 40°C									

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ISCO Glacier automatic sampler with ice-pack cooler			
Ambient temperature	During sample period:	24hrs after sample period:	Clause 4.3.1b
<ul style="list-style-type: none"> <li>Sampler with sample temperature control (maintain sample between 0°C to 5°C)</li> </ul>	3.55°C at -10°C	0.25°C at -10°C	
	3.25°C at 15°C	2.10°C at 15°C	
	3.55°C at 40°C	4.25°C at 40°C	

**Description:**

**Glacier Refrigerated Sampler**

The Glacier Refrigerated Sampler consists of a Glacier Sampler controller mounted on top of a small, transportable refrigerator unit.

The Glacier Sampler controller is housed in a sealed Noryl plastic enclosure and includes a peristaltic pump to bring the sample to a removable composite sample container located in the refrigerator. The drive motor and gear train for the pump are housed in the Noryl plastic enclosure while the pump housing and paddle/rotor are located external to the enclosure. The sample is transported by 3/8 inch I.D. PVC or 3/8 inch I.D. Teflon suction line. The controller electronics is powered by 12Vdc and provides user programmable sampler features via a keypad and display on the controller.

The sampler can be powered by 87~264Vac, 47~63Hz with capability for use on 12Vdc battery power.

The refrigerator unit utilizes a compressor running on CFC-free refrigerant. This unit is housed in an insulated cabinet constructed of ABS plastic and powder coated metal.

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## Description:

### Glacier Portable Sampler with Ice Pack Cooler

The Glacier Portable Sampler with Ice Pack Cooler is a GLS Sampler utilising Techni-Ice ice packs to provide sample cooling.

The GLS Sampler controller is housed in a sealed Noryl plastic enclosure and includes a peristaltic pump to bring the sample to a removable composite sample container located in the refrigerator. The drive motor and gear train for the pump are housed in the Noryl plastic enclosure while the pump housing and paddle/rotor are located external to the enclosure. The sample is transported by 3/8 inch I.D. PVC or 3/8 inch I.D. Teflon suction line. The controller electronics is powered by 12Vdc and provides user programmable sampler features via a keypad and display on the controller.

The GLS Sampler controller and the Glacier Sampler controller are very similar in that they use identical pump gear train, circuit board assembly, and software. The enclosures are the same other than different holes and connectors and the control panel (label, keypad, and display) are the same other than a different label.

The GLS Sampler controller is mounted on top of a "center section" which is mounted on top of the "base." The center section and base provide an insulated cabinet that contains the sample container and the coolant.

### General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule for certificate No. Sira MC 060080/03.
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

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