2103 Modem Module

Instruction Manual

Part #69-2003-180

Revision C, November, 2002

ISCO®

Foreword

This instruction manual is designed to help you gain a thorough understanding of the operation of the equipment. Isco recommends that you read this manual completely before placing the equipment in service.

Although Isco designs reliability into all equipment, there is always the possibility of a malfunction. This manual may help in diagnosing and repairing the malfunction.

If the problem persists, call or email the Isco Customer Service Department for assistance. Contact information is provided below. Simple difficulties can often be diagnosed over the phone. If it is necessary to return the equipment to the factory for service, please follow the shipping instructions provided by the Customer Service Department, including the use of the **Return Authorization Number** specified. **Be sure to include a note describing the malfunction.** This will aid in the prompt repair and return of the equipment.

Isco welcomes suggestions that would improve the information presented in this manual or enhance the operation of the equipment itself.

Contact Information

Phone:	(800) 228-4373	(USA, Canada, Mexico)
	(402) 464-0231	(Outside North America)
Repair Service:	(800) 775-2965	(Analytical and Process Monitoring Instruments)
	(800) 228-4373	(Samplers and Flow Meters)
Fax:	(402) 465-3022	
Email address:	info@isco.com	
Website:	www.isco.com	
Return equipment to:	4700 Superior Street, Lincoln, NE 68504-1398	
Other correspondence:	P.O. Box 82531, Lincoln, NE 68501-2531	

2103 Modem Module

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2103 Modem Module

Section 1 Introduction

1.1 Introduction

This instruction manual is designed to help you gain a thorough understanding of the operation of the 2103 Modem Module. Isco recommends that you read this manual completely before placing the equipment into service.

1.2 Product Description

The 2103 Modem is a portable data interrogation unit designed to transmit data from Isco's Model 2100 Series flow modules, which measure parameters of open channel flow streams. It works in conjunction with Isco's *Flowlink 4 for Windows* software.

The 2103 Modem stacks on top of a 2100 Series module, using the same locking mechanism that connects the 2100 Series modules to each other. The 2103 is compatible with Isco's 2150 flow module, 2101 Field Wizard, and 2102 wireless module. It is powered by Isco's 2191 battery module.

All enclosures are rated NEMA 4X, 6P(IP68). The permanently sealed enclosures are designed to meet the environmental demands of many sewer flow monitoring applications. All connections between modules, sensors, and communication cables "lock" in place. The locking mechanisms strongly secure the components and ensure a watertight seal.

1.3 Identifying Module Components

Figures 1-1 and 1-2 identify the key components of the 2103 Modem.

Figure 1-1 2103 Modem Components - Top View

Table 1-1 2103 Modem Module Components - Top View

Item No. Fig. 1-2	Name	Description
1	Communication Connector	This port is used to connect the 2103 Modem to other modules in a stack.
2	Connector Cap	Insert into the communication connector when it is not in use to protect the connector from moisture damage. When the connector is in use, store the connector cap in the cap holder.
3	Cap Holder	Stores the connector cap when the communication connector is in use.
4	Modem Cable Connector	Used to connect the modem cable to the 2103 Modem Module.
5	Modem Cable Connector Cap	Insert into the modem cable connector when the connector is not in use to protect the connector from damage.
6	Latch Release	Push in to unlock the module from a stack.

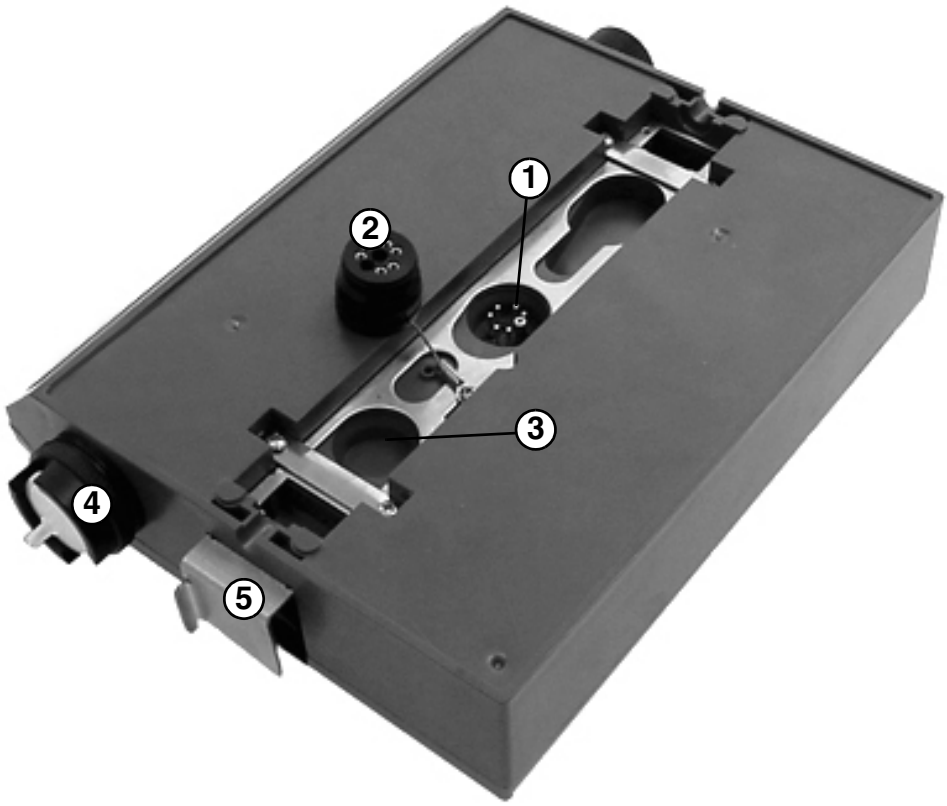


Figure 1-2 2103 Modem Components - Bottom View

Table 1-2 2103 Modem Module Components - Bottom View

Item No. Fig. 1-3	Name	Description
1	Communication Connector	This connects the 2103 Modem to other 2100 Series modules in the stack and is used to transfer data.
2	Connector Cap	Insert into the communication connector when not in use to protect the connector from moisture damage. When the connector is in use, store the connector cap in the cap holder.
3	Cap Holder	Stores the connector cap when the communication connector is in use.
4	Desiccant Cartridge and Hydrophobic Filter	Prevents moisture from entering the unit.
5	Latch	Push in to lock the module in a stack.

Table 1-3 2103 Modem Module Technical Specifications	
Dimensions	Length = 10.5 inches (26.7 cm) Width = 7.5 inches (19 cm) Height = 2.9 inches (7.4 cm)
Weight	2 lbs. (.9 Kg)
Material	High-impact molded polystyrene
Enclosure	NEMA 4X, 6P, IP68
Power	6.6 to 16.6 VDC, 141 mA typical at 12 VDC, 0.41 mA standby
Operating Temperature	-4° to 140°F (-20° to 60°C)
Storage Temperature	-40° to 140°F (-40° to 60°C)
Typical Battery Life	291 days*
Modulation Standards Supported	Bell 103, Bell 212, V.21, V.22, V.22 bis, V.23, V.32, V.32 bis, V.34
Communication Speeds Supported	300, 1200, 2400, 4800, 7200, 9600, 12000, 14400, 16800, 19200, 21600, 24000, 26400, 28800, 31200, 33600 baud
Error Correction Standards Supported	V.42 LAPM, MNP-2, MNP-4, MNP-10
Data Compression Standards Supported	V.42 bis, MNP-5

* Actual battery life will vary depending upon configuration. The figure given assumes interrogation with Flowlink 4.13 once a week, with a site configuration of a 2103, 2150, and 2191 (using Energizer 529 batteries) and a connection speed of 33600 baud. The 2150 was configured to record level, velocity, flow rate every 15 minutes, total flow, and battery voltage every 24 hours.

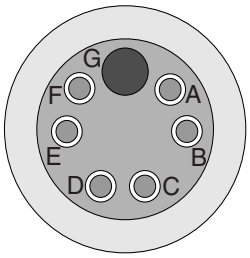


Table 1-4 2103 Communication Connector Pins		
Pin	**Name**	**Description**
A	LONA	Neuron differential transceiver Data A
B	LONB	Neuron differential transceiver Data B
C	VIN+	Positive power supply voltage input (+12 VDC nominal)
D	VIN–	Negative power supply voltage input (0 VDC nominal)
E	RCVUP	PC data receiver inverted input
F	XMTUP	PC data transmit inverted output
G	Key	Aligns connector pins

Figure 1-3 Model 2103 Communication Connector Pins

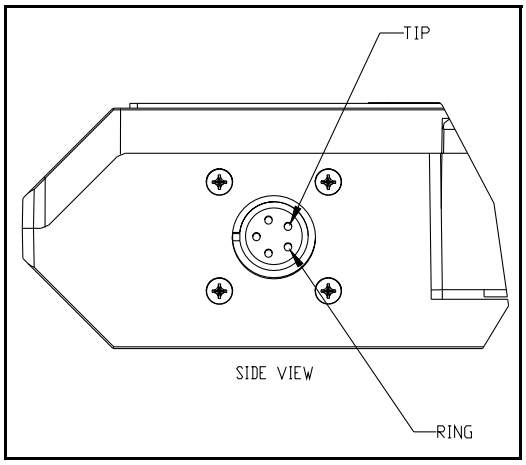


Figure 1-4 Modem Cable Connector

1.4 Safety Symbols and Hazard Alerts

⚠ This icon identifies a general hazard and is accompanied with details about the hazard. The instruction manual identifies the hazardous condition and any steps necessary to correct the condition. The manual presents this information in one of two ways:

⚠ CAUTION

Cautions identify a potential hazard, which if not avoided, may result in minor or moderate injury. This category can also warn you of unsafe practices, or conditions that may cause property damage.

⚠ RECOMMANDATION

Recommandation correspond à un risque potentiel qui, s'il n'est pas évité peut provoquer des blessures mineures ou des déteriorations de matériel.

⚠ WARNING

Warnings indicate potentially hazardous conditions. If you do not avoid these risks, they could cause you death or serious injury.

⚠ ATTENTION

Attention indique des risques potentiels importants.S'ils ne sont pas évités, ils peuvent provoquer des blessures sérieuses ou mortelles.

1.5 Technical Service

Although Isco designs reliability into all of its equipment, there is always the possibility of a malfunction occurring. You can use this manual to help in diagnosing and repairing any malfunctions. If the malfunction persists, call or write the Isco Technical Service Department for assistance:

Isco Inc.
Technical Service Department
P.O. Box 82531
Lincoln, NE 68501
800-228-4373 or 402-464-0231
FAX: 402-465-3001
e-mail: service@isco.com

Simple difficulties can often be diagnosed over the phone. If it is necessary to return the equipment to the factory for service, please follow the shipping instructions provided by the Technical Service Department, including the use of the Return Authorization Number specified. Be sure to include a note describing the malfunction. This will aid in the prompt repair and return of the equipment.

2103 Modem Module

Section 2 Installation and Operation

2.1 Unpacking Instructions

When the system arrives, inspect the contents for any damage. If there is damage, contact the delivery company and Isco (or its agent) immediately.

⚠ WARNING

If there is any evidence that any items may have been damaged in shipping, do not attempt to install the unit. Please contact Isco (or its agent) for advice.

⚠ ATTENTION

Si les instruments ou produits présentent des traces évidentes de dégats dus au transport, Veuillez contacter votre distributeur ISCO avant toute installation de l'appareil.

Isco, Inc.
Customer Service Dept.
P.O. Box 82531
Lincoln, NE 68501 USA

Phone: (800) 228-4373
Outside USA & Canada call:
(402) 464-0231

FAX: (402) 465-3022

E-mail: info@isco.com

When you unpack the system, check the items against the packing list. If any parts are missing, contact the delivery company and Isco's Customer Service Department. When you report missing part(s), please indicate them by part number. In addition to the main packing list, there may be other packing lists for various sub-components.

It is recommended that you retain the shipping cartons as they can be used to ship the unit in the event that it is necessary to transport the system.

Please complete the registration card and return it to Isco, Inc.

2.2 Safety

⚠ WARNING

Avoid hazardous practices! If you use these instruments in any way not specified in this manual, the protection provided by the instruments may be impaired; this will increase your risk of injury.

⚠ ATTENTION

Eviter les manipulations hasardeuses! Si vous utilisez ces appareils de façon non conforme au mode d'emploi, vous risquez des blessures graves.

⚠ WARNING

The installation and use of this product may subject you to hazardous working conditions that can cause you serious or fatal injuries. Take any necessary precautions before entering a worksite. Install and operate this product in accordance with all applicable safety and health regulations, and local ordinances.

⚠ ATTENTION

L'installation de ces instruments peut vous entrainer à travailler dans des conditions précaires et risquées pouvant entrainer de graves blessures.Veuillez respecter toutes les conditions requises de sécurité avant de pénétrer dans un regard ou sur le site concerné. Installer et manipuler l'instrument selon les règles ou la législation en vigueur concernant la sécurité et la protection des individus.

The Model 2100 Series components are often installed in confined spaces. Some examples of confined spaces include manholes, pipelines, digesters, and storage tanks. These spaces may become hazardous environments that can prove fatal for those unprepared. These spaces are governed by OSHA 1910.146 and require a permit before entering.

2.3 Installation

Follow the instructions below to install your 2103 Modem.

2.3.1 Latches - Locking and Unlocking

Latches must be operated to stack and unstack the modules in a Series 2100 stack. The mechanisms are the same for the 2103 Modem and other 2100 Series modules. Detailed instructions with photos can be found in your 2150 instruction manual.

Take a moment to familiarize yourself with operating the latches. You must unlock the latch to place the module on top of another module in a stack. The latch is unlocked by pushing in the latch release on the right side of the module. To lock the latch, push in the latch on the left side of the module.

⚠ CAUTION

The latch can be damaged by applying too much force. Never press on both sides at the same time. Do not force the latch if it is obstructed. While some degree of pressure must be applied to slide the latch, the ends of the latches should never bend more than 1/8".

⚠ RECOMMANDATION

L'attache peut-être endommagée en la forçant. Ne jamais presser simultanément des deux côtés à la fois. Ne pas forcer en cas de résistance. Ne jamais tordre les extrémités des attaches de plus de 3 mm.

☑ *Note*

Latches will "click" when they are fully locked and unlocked.

2.3.2 Communication Connectors

Connecting the 2103 Modem module involves uncapping and capping communication connectors. When a communication connector is not in use, the connector should always be capped. The cap will seal the connector to prevent corrosion, and will improve communications.

When a communication connector is in use, store the cap on the holder next to the connector. The communication connector will be sealed by its mating connector.

Detailed instructions and photos can be found in your 2150 instruction manual.

⚠ CAUTION

Caps **PUSH ON** and **PULL OFF**. Do not rotate the caps to remove them from the connectors.

⚠ RECOMMANDATION

Capuchons POUSSER et TIRER. Ne pas tourner les capuchons pour les enlever des prises.

> **Note**
>
> For modules to correctly stack and lock together, protective caps between the modules must be stored on the holders.

2.3.3 Stacking Modules

The 2103 Modem Module can be located anywhere within a 2100 Series stack. It will draw its power from the battery module located in the stack.

To connect the 2103 with a 2100 Series module, refer to the following instructions.

1. On the top of the 2100 Series module, remove the cap and stow it on the holder. This exposes the communication connector on the module.
2. Inspect the module's communication connector. It should be clean and dry. Damaged O-rings must be replaced.
3. Unlock the 2103's latch by pressing in on the latch release (right side).
4. Underneath the 2103, remove the cap from the lower communication connector and stow it in the holder.
5. Lock the latch. Locking the latch correctly seats and aligns the lower cap in its holder.
6. Position the 2103 over the 2100 Series module. Align the connectors and lower the 2103 onto the other module.
7. Unlock the 2103's latch by pressing in on the latch release (right side).
8. Firmly press the modules together and lock the 2103's latch (left side).

The communications indicator will blink during the start-up routine to indicate the 2103 is operating.

2.4 Telephone Line Connection

The FCC (Federal Communications Commission) governs communications over telephone lines. Your local telephone company will provide you with the line between the 2103 Modem and your computer. Contact them for connection information.

The 2103 Modem is in compliance with FCC part 68 rules. Accordingly, the FCC requires the following information be published:

☑ *Note*

The 2103 Modem is designed to be used on standard device telephone lines. It connects to the telephone by means of a standard jack called the USOC RJ-11C. Connection to telephone-company-provided coin service (central office implemented systems) is prohibited, and connection to party lines service is subject to state tariffs.

Changes in Attestation Procedure for Plugs and Jacks
Isco Inc. attests that the network interface plugs or jacks used on this equipment comply with and will continue to comply with the mechanical requirements specified in Part 58, sub-part F, specifically the dimensions, tolerances and metallic plating requirements. The compliance of these connectors will be assured by purchase specifications and incoming inspection. Documentation of such specifications and/or inspections will be provided to the FCC within 30 days of their request for the same.

Telephone Company Procedures
The goal of the telephone company is to provide you with the best service it can. In order to do this, it may occasionally be necessary for them to make changes in their equipment, operations or procedures. If these changes might affect your service or the operation of your equipment, the telephone company will give you notice, in writing, to allow you to make any changes necessary to maintain uninterrupted service.

In certain circumstances, it may be necessary for the telephone company to request information from you concerning the equipment which you have connected to your telephone line. Upon request of the telephone company, provide the FCC registration number and the ringer equivalence number (REN); both of these items are listed on the equipment label. The sum of all the RENs on your telephone lines should be less than five in order to assure proper service from the telephone company. In some cases, a sum of five may not be usable on a given line. Consult your telephone provider.

If Problems Arise: If any of your telephone equipment is not operating properly, you should immediately remove it from your telephone line, as it may cause harm to the telephone network. If the telephone company notes a problem, they may temporarily discontinue service. When practical, they will notify you in advance of this disconnection. If advance notice is not

feasible, you will be notified as soon as possible. When you are notified, you will be given the opportunity to correct the problem and will be informed of your right to file a complaint with the FCC. Contact your local telephone service provider if you have any questions about your phone line.

In the event repairs are needed on the 2103 Modem, they should be performed by Isco Inc. or its authorized representative. For information, contact the Isco Customer Service Department at (800) 228-4373 or (402) 464-0231.

2.4.1 Modem Cable Connection

After you have installed the 2103 on the stack, you need to attach the modem cable so the module can be connected to a phone line.

Remove the connector cap from the 5-pin circular modem cable connector on the right hand side of the 2103. Attach the modem cable to the connector (Figure 2-1), and then connect the other end of the modem cable to a standard telephone jack (USOC RJ-11C).

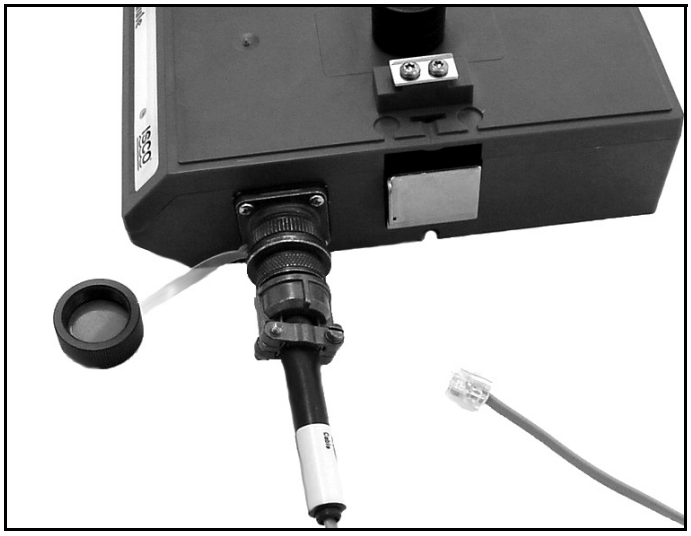


Figure 2-1 Connecting the Modem Cable

2.4.2 Connection Without Using The Modem Cable

If desired, the 2103 can be connected to a standard telephone line by attaching the telephone line cable to a connector that mates with the 2103's 5-pin circular modem cable connector (Figure 2-2). Be sure that you have a water tight seal on your wire connections.

For your reference, the modem cable uses a 5-pin amphenol socket, MS3106A-5S.

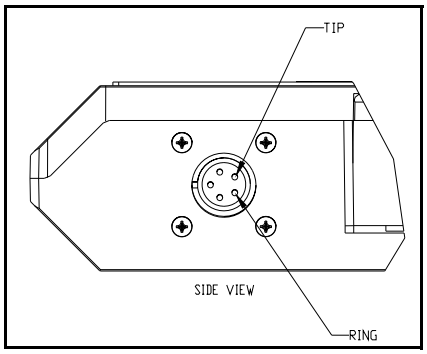


Figure 2-2 Modem Cable Connector

2.5 Connecting To Flowlink

After the 2103 is installed and the modem cable connected, you need to configure the 2103 in Isco's Flowlink software.

> **Note**
>
> The 2103 Modem requires Flowlink 4.13 or later. Earlier versions do not support the Modem. The Modem requires that the 2100 Series modules it connects to have a code version 1.06 or greater.

Open Flowlink and go to the connect box (Figure 2-3) by either selecting it from the pull down menu or clicking on the icon.

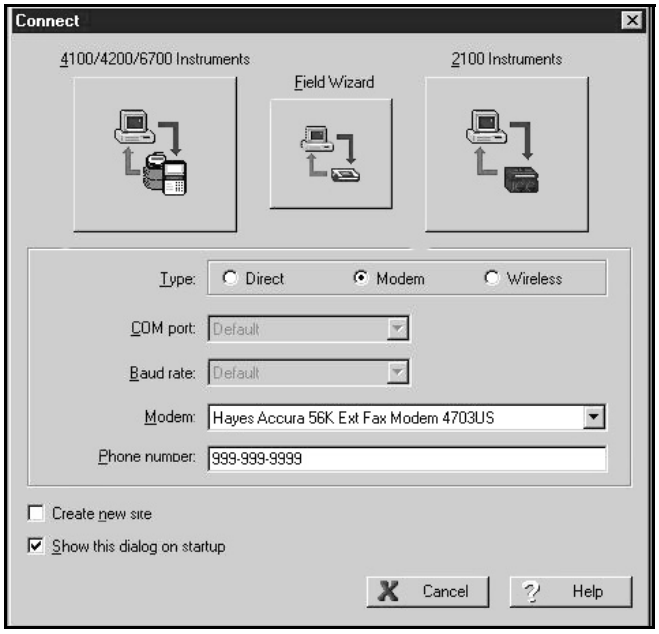


Figure 2-3 Flowlink Connect Screen

Select Modem and then select the type of modem that your computer system is using. Enter the phone number of the phone line that is being used by the 2103.

When you have entered the modem connection information, click on the 2100 Series box to the upper right.

Detailed Flowlink instructions are beyond the scope of this manual. Flowlink's operating instructions are available in a Windows Help format. You can access the help topics for an active window by clicking on its *Help* button or by pressing F1 on your computer's keyboard. You can also access Help topics by selecting Help from the Flowlink menu.

2103 Modem Module

Section 3 Maintenance

3.1 Maintenance Overview

This section explains the maintenance requirements of the Model 2103 Modem.

The 2103 Modem is designed to perform reliably in adverse conditions with a minimal amount of routine service requirements. To keep your system working properly, you should check the desiccant and channel conditions at regular intervals.

Maintenance intervals are affected by many variables. Humidity levels obviously affect the service life of the desiccant, and the amount of debris in the stream can drastically alter the channel conditions.

Experience is often the best tool to use when establishing minimum maintenance intervals for your system. Until you have gained an understanding of the AV Module's operation under differing environmental conditions, a weekly maintenance interval is recommended.

3.1.1 Cleaning

The 2103 Modem case may be cleaned using a soft cloth, warm water, and a mild detergent. Do not use an abrasive cleanser, or you might scratch the surface of the case.

Before cleaning, make sure that all the protective connector caps are in place to avoid damage to any of the connectors. You should also ensure that no water or cleanser enters the desiccant unit.

3.2 Maintenance Kit

Isco, Inc.
Customer Service Dept.
P.O. Box 82531
Lincoln, NE 68501 USA
Phone: (800) 228-4373
(402) 464-0231
FAX: (402) 465-3022
E-mail: info@isco.com

Some of the parts mentioned in the *Maintenance* section of this manual are available in a maintenance kit.

Kit number 60-2009-004 contains three O-rings for the communication connectors, silicone lubricant to apply to the O-rings, a desiccant assembly, and a container of silica gel desiccant. A maintenance instruction sheet is included with the kit.

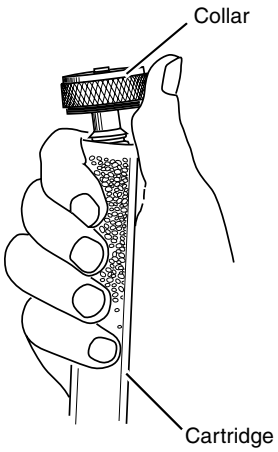
You can order the kit by calling Isco's Customer Service Department.

3.3 Desiccant

The 2103 Modem uses desiccant to protect the internal components from moisture damage. The cartridge is filled with indicating silica gel beads. The beads are blue when dry. As the desiccant becomes saturated, the color changes from blue to pink. Replace the desiccant before the entire length of the cartridge turns pink.

3.3.1 Replacing the Desiccant

The desiccant is contained in a cartridge located on the left side of the 2103 Modem. To remove the cartridge, unscrew the collar and slide the cartridge out of the 2103 Modem. The clear tube reveals the silica gel desiccant inside.



To replace the silica gel desiccant:

1. Hold the cartridge upright with the collar at the top.
2. As shown in the margin, push the collar off the cartridge.
3. Empty the saturated silica gel beads.
4. Fill the tube with new (Isco P/N 099-0011-03) or reactivated (see section 3.3.2) silica gel desiccant.
5. Press the collar onto the tube.
6. Slide the cartridge into the 2103 Modem. Tighten the collar to seal the cartridge in place.

3.3.2 Reactivating the Desiccant

Silica gel beads and bags of desiccant can be reactivated.

⚠ CAUTION

Desiccant may produce irritating fumes when heated. Observe the following precautions:

- Use a vented oven in a well ventilated room.
- Do not remain in the room while the regeneration is taking place.
- Use the recommended temperature. Avoid heating the desiccant at higher than recommended temperatures.

⚠ RECOMMANDATION

Le dessicatif peut produire des vapeurs irritantes en étant chauffé. Suivez ces précautions:

- Utilisez un four déchargé dans une chambre bien aérée.
- Ne restez pas dans la chambre pendant que le desiccatif se régénère.
- Régénérez le desiccatif à la température recommandée. Évitez de chauffer le dessicatif aux températures qui sont supérieures de celles qui sont recommandées.

There is the potential of irritating fumes coming from the desiccant during reactivation. Because of this, we urge you to use caution, and to heat the desiccant in a well ventilated room. Material Safety Data Sheets are in the back of this manual.

The desiccant's ability to remove moisture may lessen with each saturation/reactivation cycle, resulting in a need for more frequent service. After several cycles, the desiccant may no longer be effective as it saturates too quickly. At this point, replace the desiccant.

Silica gel

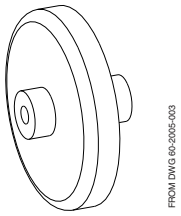
To reactivate the silica gel desiccant, pour the spent desiccant into a heat resistant container. Never heat the cartridge assembly; it will melt. Heat the silica gel in a *vented convection oven* at 212° to 350°F (100° to 175°C) for two to three hours, or until the blue color returns. Allow the desiccant to cool and store it in an airtight container until ready for use.

Desiccant bags

Bagged desiccant will often include reactivation or recharging instructions on the bag's labeling. Always follow the instructions printed on the bag. If the instructions are not available, the bags may be heated in a *vented convection oven* at 245°F (120°C) for sixteen hours.

3.4 Hydrophobic Filter

If the 2103 Modem module is submerged, a hydrophobic filter prevents water from entering the desiccant cartridge. Any amount of water will plug the filter and it must be replaced so the case will be reliably ventilated.



To remove the hydrophobic filter, grasp the filter and pull it from the desiccant cartridge collar. The filter is only held in place by its friction fitting; rocking it back and forth while pulling may help. Firmly press the replacement filter (Isco P/N 60-2005-003) in place.

If the hydrophobic filter frequently requires replacement, you should consider relocating the modules so they are better protected. Alternatively, replace the existing hydrophobic filter with the extension accessory package included with your unit. Follow the instructions above to remove and replace the filter. Locate the other end of the tubing in a dry location and secure it.

3.5 O-Rings

The communication connectors on the top and bottom of the 2103 Modem contain O-rings that need periodic lubrication and replacement. The maintenance kit described in section 3.2 contains O-rings and silicone lubricant.

Whenever you replace the O-rings, or have removed them from the connectors for some reason, you should lubricate the O-rings by applying lubricant around the circumference of the ring.

☑ Note

Do not use petroleum-based lubricants. Petroleum-based lubricants will cause the O-ring to swell and eventually deteriorate. Aerosol silicone lubricant sprays often use petroleum based propellants. If you are using an aerosol spray, allow a few minutes for the propellant to evaporate before proceeding.

3.6 How to Obtain Service

The internal components of the 2103 Modem are not user-serviceable. The case is completely sealed to protect the internal components. To repair the unit, the case must be broken open and replaced. If you think your module requires repair, contact Isco's Technical Service Department.

Corresponding with an Isco Technical Service Representative can often resolve the problem without the need to return the item. If the difficulty cannot be resolved you will be issued a Return Authorization Number (RAN) and information on returning it to the factory.

Isco, Inc.
Technical Service Dept.
P.O. Box 82531
Lincoln, NE 68501 USA

Phone: (800) 228-4373
(402) 464-0231
FAX: (402) 465-3085

E-mail: service@isco.com

2103 Modem Module

Appendix A Replacement Parts

A.1 Replacement Parts

Replacement parts are called out in the following pages. Refer to the call-out in the adjacent table to determine the part number for the item.

Replacement parts can be purchased by contacting Isco's Customer Service Department.

Isco, Inc.
Customer Service Department
P.O. Box 82531
Lincoln, NE 68501 USA

Phone: (800) 228-4373
(402) 464-0231
FAX: (402) 465-3022

E-mail: info@isco.com

REPLACEMENT PARTS LIST

Isco, Inc.

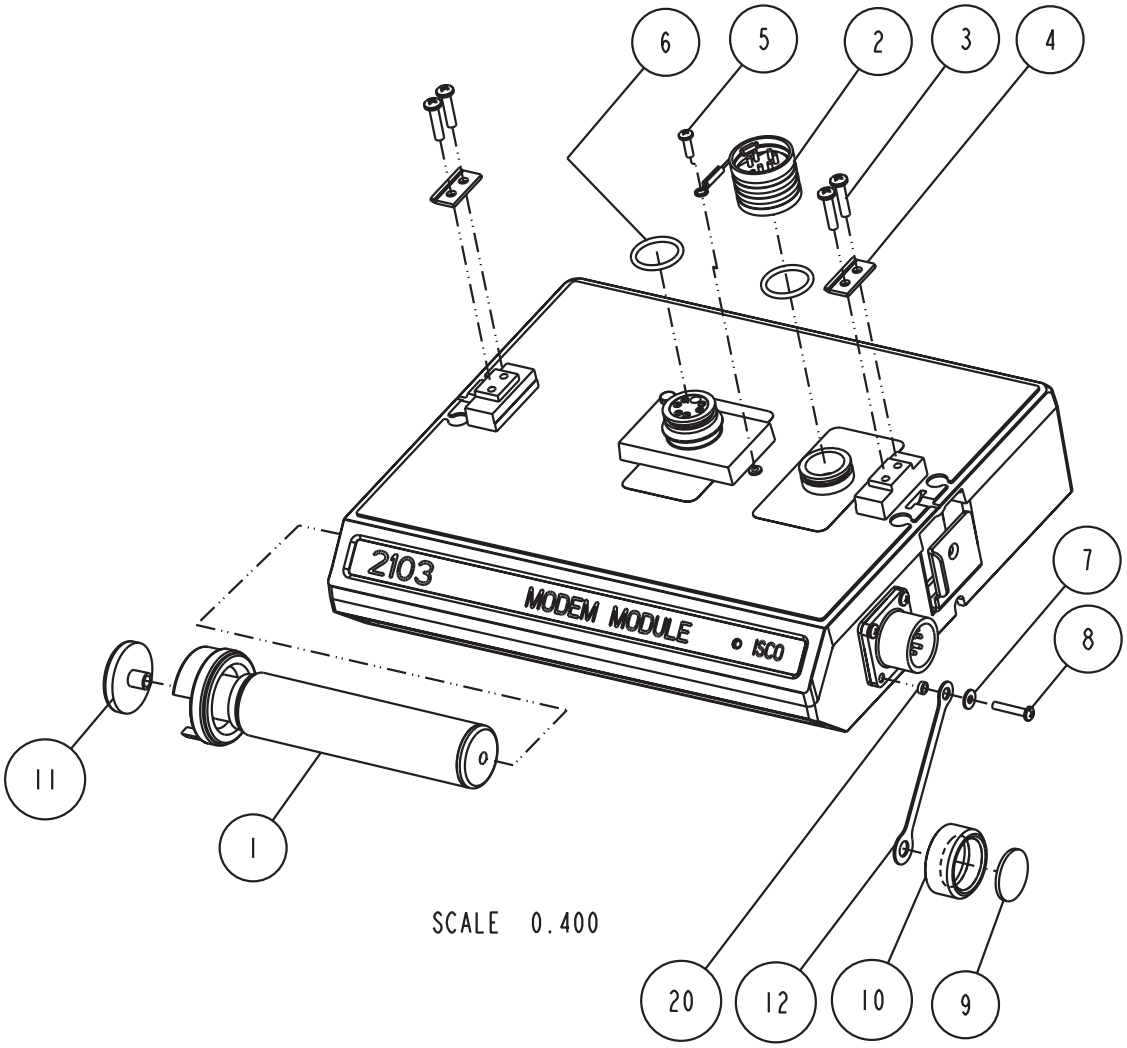
602002154

SHEET: 1 OF 3

REV: C | DATE: 01250

ITEM NO.	PART NUMBER	DESCRIPTION
1	602004060	DESICCANT ASSEMBLY
2	602004012	PLUG ASSY, MALE CONN(INCL'S ITEM 6)
3	231514920	SCREW, PH, SELF TAP, #6-19 X 5/8 SST
4	602003019	CLIP, NODE
5	231310140	SCREW, PH, SELF TAP, #4 X 3/8 SST
6	202100669	O RING, .669ID .79 XSECT, SILICONE
7	233010400	WASHER, FLAT, #4, SST
8	231514310	SCREW, PH, #4-40 X 5/8 SST
9	603113032	GASKET, CONNECTOR CAP
10	602005004	CAP, CONNECTOR MODIFIED
11	602005003	FILTER, INLINE AIR, FOR 25mm TUBING
12	609005001	STRAP, CONNECTOR CAP, MOD
13	201900102	BALL, .125 D SST
14	203011602	SPRING, .022 Ø WIRE, .31 FREE LG
15	692003190	LATCH, LARGE
16	602003022	HOLD, LATCH
17	231611108	SCREW, PH, SELF TAP, #4 X 1/2 SST
18	602004013	PLUG ASSY. FEM CONN (INCL'S ITEM 6)
19	692003189	LATCH, SMALL
20	601113011	SPACER

NOTE: 1. For current prices and quotations on parts, contact Isco Service Department.
2. This list is subject to change without notice.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2103
MODEM MODULE
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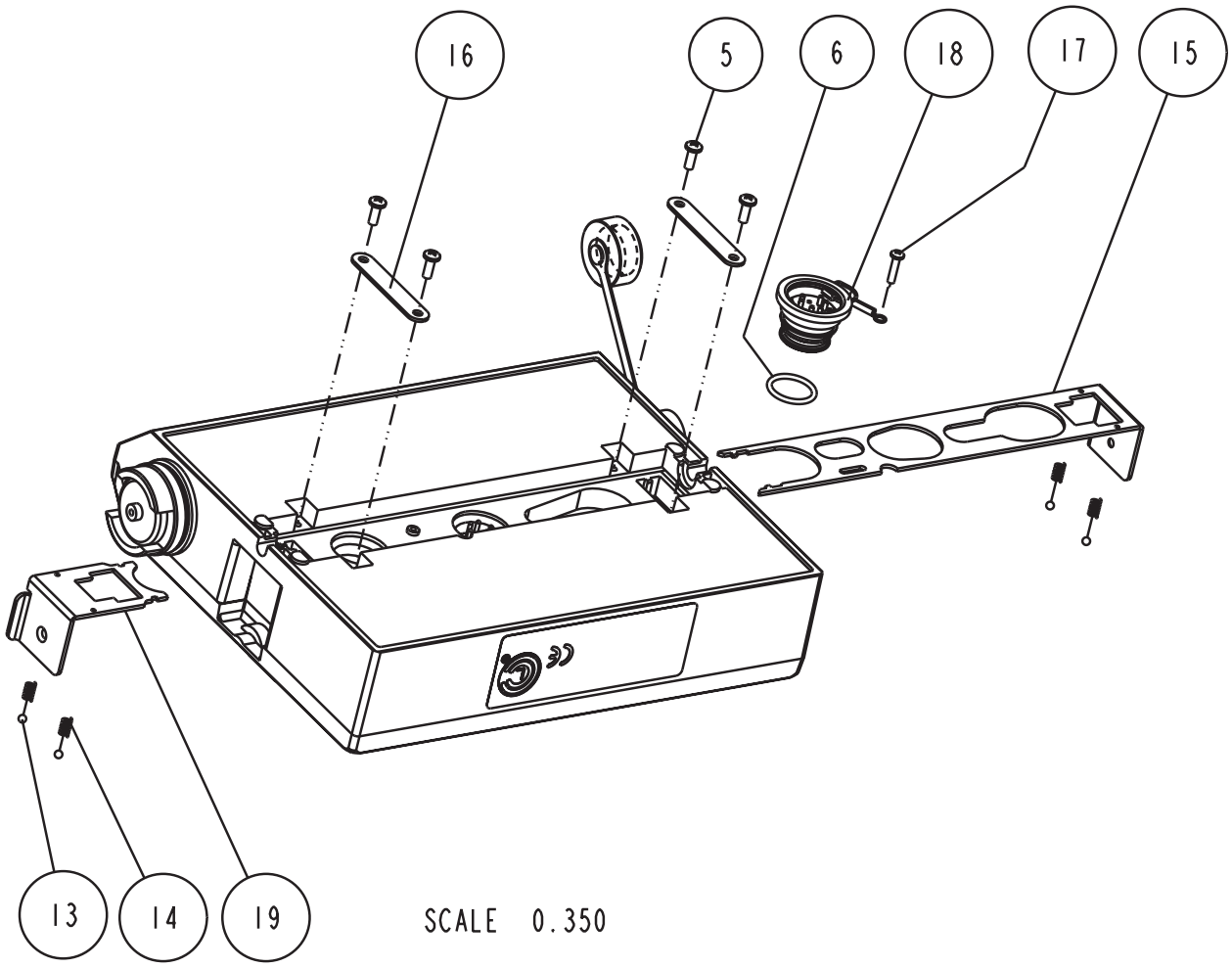
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2103 Modem Module

Appendix B Accessories

B.1 How to Order

Accessories can be purchased by contacting Isco's Customer Service Department.

Isco, Inc.
Customer Service Dept.
P.O. Box 82531
Lincoln, NE 68501 USA

Phone: (800) 228-4373
(402) 464-0231
FAX: (402) 465-3022

E-mail: info@isco.com

B.2 General Accessories

Instruction Manual	69-2003-180
Flowlink for Windows software	(call for part number)
Modem Cable	60-3214-020
Maintenance Kit	60-2009-004
Silica Gel Desiccant	099-0011-03
Hydrophobic Filter	60-2005-003
Tubing, 10' Silicone	60-2003-104

2103 Modem Module

Appendix C Material Safety Data Sheets

C.1 Overview

This appendix to the manual provides Material Safety Data Sheets for the desiccant used by the Model 2103 Modem.

Isco cannot guarantee the accuracy of the data. Specific questions regarding the use and handling of the products should be directed to the manufacturer listed on the MSDS.

Material Safety Data Sheet

Indicating Silica Gel

Identity (Trade Name as Used on Label)

Manufacturer :	MULTISORB TECHNOLOGIES, INC. (formerly Multiform Desiccants, Inc.)	MSDS Number* :	M75
Address:	325 Harlem Road Buffalo, NY 14224	CAS Number* :	
Phone Number (For Information):	716/824-8900	Date Prepared:	July 6, 2000
Emergency Phone Number:	716/824-8900	Prepared By* :	G.E. McKedy

Section 1 - Material Identification and Information

Components - Chemical Name & Common Names (Hazardous Components 1% or greater; Carcinogens 0.1% or greater)	%*	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED
Silica Gel SiO_2	98.0	6mg/m^3 (total dust)	10mg/m^3 (total dust)	
Cobalt Chloride	>2.0	0.05mg/m^3 (TWA cobalt metal dust & fume)	.05mg/m^3 (Cobalt, TWA)	
Non-Hazardous Ingredients				
TOTAL	100			

Section 2 - Physical/Chemical Characteristics

Boiling Point	N/A	Specific Gravity (H_20 = 1)	2.1
Vapor Pressure (mm Hg and Temperature	N/A	Melting Point	N/A
Vapor Density (Air =1)	N/A	Evaporation Rate (_____=1)	N/A
Solubility in Water	Insoluble, but will adsorb moisture.	Water Reactive	Not reactive, but will adsorb moisture.
Appearance and Odor	Purple crystals, no odor.		

Section 3 - Fire and Explosion Hazard Data

Flash Point and Methods Used	N/A	Auto-Ignition Temperature	N/A	Flammability Limits in Air % by Volume	N/A	LEL	UEL
Extinguisher Media	Dry chemical, carbon dioxide and foam can be used.						
Special Fire Fighting Procedures	Water will generate heat due to the silica gel which will adsorb water and liberate heat.						
Unusual Fire and Explosion Hazards	When exposed to water, the silica gel can get hot enough to reach the boiling point of water. Flooding with water will reduce the temperature to safe limits.						

Section 4 - Reactivity Hazard Data

STABILITY ☐**Stable** ☐**Unstable**	Conditions To Avoid	Moisture and high humidity environments.
Incompatibility (Materials to Avoid)	Water.	
Hazardous Decomposition Products	Carbon dioxide, carbon monoxide, water	
HAZARDOUS POLYMERIZATION ☐May Occur	Conditions To Avoid	None.

*Optional

Section 5 - Health Hazard Data

PRIMARY ROUTES OF ENTRY	☐Inhalation ☐Skin Absorption	☐Ingestion ☐Not Hazardous	**CARCINOGEN LISTED IN**	☐NTP ☐IARC Monograph	☐OSHA ☐Not Listed
HEALTH HAZARDS	Acute	May cause eye, skin and mucous membrane irritation.			
	Chronic	Prolonged inhalation may cause lung damage.			
Signs and Symptoms of Exposure	Drying and irritation.				
Medical Conditions Generally Aggravated by Exposure	Asthma.				
EMERGENCY FIRST AID PROCEDURES - Seek medical assistance for further treatment, observation and support if necessary.					
Eye Contact	Flush with water for at least 15 minutes.				
Skin Contact	Wash affected area with soap and water.				
Inhalation	Remove affected person to fresh air.				
Ingestion	Drink at least 2 glasses of water.				

Section 6 - Control and Protective Measures

Respiratory Protection (Specify Type)	Use NIOSH approved dust mask or respirator.		
Protective Gloves	Light cotton gloves.	Eye Protection	Safety glasses.
VENTILATION TO BE USED	☐ Local Exhaust	☐Mechanical (General)	☐Special
	☐Other (Specify)		
Other Protective Clothing and Equipment	None.		
Hygienic Work Practices	Avoid raising dust. Avoid contact with skin, eyes and clothing.		

Section 7 - Precautions for Safe Handling and Use/Leak Procedures

Steps to be Taken if Material Is Spilled Or Released	Sweep or vacuum up and place the spilled material in a waste disposal container. Avoid raising dust.
Waste Disposal Methods	Dispose in an approved landfill according to federal, state and local regulations.
Precautions to be Taken In Handling and Storage	Cover promptly to avoid blowing dust. Wash after handling.
Other Precautions and/or Special Hazards	Keep in sealed containers away from moisture. The silica gel will readily adsorb moisture.

DWG 60-9002-030

101 Christine Drive
Belen, New Mexico 87002
Phone: (505) 864-6691
Fax: (505) 861-2355

SÜD-CHEMIE
Performance Packaging

ISO 9002

MATERIAL SAFETY DATA SHEET -- September 28, 1998
SORB-IT®
Packaged Desiccant

SECTION I -- PRODUCT IDENTIFICATION

Trade Name and Synonyms:	Silica Gel, Synthetic Amorphous Silica, Silicon, Dioxide
Chemical Family:	Synthetic Amorphous Silica
Formula:	SiO_2.x H_2O

SECTION II -- HAZARDOUS INGREDIENTS

Components in the Solid Mixture

COMPONENT	CAS No	%	ACGIH/TLV (PPM)	OSHA-(PEL)
Amorphous Silica	63231-67-4	>99	PEL - 20 (RESPIRABLE), TLV – 5	LIMIT – NONE, HAZARD - IRRITANT ˝

Synthetic amorphous silica is not to be confused with crystalline silica such as quartz, cristobalite or tridymite or with diatomaceous earth or other naturally occurring forms of amorphous silica that frequently contain crystalline forms.

This product is in granular form and packed in bags for use as a desiccant. Therefore, no exposure to the product is anticipated under normal use of this product. Avoid inhaling desiccant dust.

SECTION III -- PHYSICAL DATA

Appearance and Odor:	White granules; odorless.
Melting Point:	>1600 Deg C; >2900 Deg F
Solubility in Water:	Insoluble.
Bulk Density:	>40 lbs./cu. ft.
Percent Volatile by Weight @ 1750 Deg F:	<10%.

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SORB-IT®
Packaged Desiccant

SECTION IV -- FIRE EXPLOSION DATA

Fire and Explosion Hazard - Negligible fire and explosion hazard when exposed to heat or flame by reaction with incompatible substances.

Flash Point - Nonflammable.

Firefighting Media - Dry chemical, water spray, or foam. For larger fires, use water spray fog or foam.

Firefighting - Nonflammable solids, liquids, or gases: Cool containers that are exposed to flames with water from the side until well after fire is out. For massive fire in enclosed area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of the tank due to fire.

SECTION V -- HEALTH HAZARD DATA

Health hazards may arise from inhalation, ingestion, and/or contact with the skin and/or eyes. Ingestion may result in damage to throat and esophagus and/or gastrointestinal disorders. Inhalation may cause burning to the upper respiratory tract and/or temporary or permanent lung damage. Prolonged or repeated contact with the skin, in absence of proper hygiene, may cause dryness, irritation, and/or dermatitis. Contact with eye tissue may result in irritation, burns, or conjunctivitis.

First Aid (Inhalation) - Remove to fresh air immediately. If breathing has stopped, give artificial respiration. Keep affected person warm and at rest. Get medical attention immediately.

First Aid (Ingestion) - If large amounts have been ingested, give emetics to cause vomiting. Stomach siphon may be applied as well. Milk and fatty acids should be avoided. Get medical attention immediately.

First Aid (Eyes) - Wash eyes immediately and carefully for 30 minutes with running water.

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Belen, New Mexico 87002
Phone: (505) 864-6691
Fax: (505) 861-2355

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MATERIAL SAFETY DATA SHEET -- September 28, 1998
SORB-IT®
Packaged Desiccant

NOTE TO PHYSICIAN: This product is a desiccant and generates heat as it adsorbs water. The used product can contain material of hazardous nature. Identify that material and treat accordingly.

SECTION VI -- REACTIVITY DATA

Reactivity - Silica gel is stable under normal temperatures and pressures in sealed containers. Moisture can cause a rise in temperature which may result in a burn.

SECTION VII --SPILL OR LEAK PROCEDURES

Notify safety personnel of spills or leaks. Clean-up personnel need protection against inhalation of dusts or fumes. Eye protection is required. Vacuuming and/or wet methods of cleanup are preferred. Place in appropriate containers for disposal, keeping airborne particulates at a minimum.

SECTION VIII -- SPECIAL PROTECTION INFORMATION

Respiratory Protection - Provide a NIOSH/MSHA jointly approved respirator in the absence of proper environmental control. Contact your safety equipment supplier for proper mask type.

Ventilation - Provide general and/or local exhaust ventilation to keep exposures below the TLV. Ventilation used must be designed to prevent spots of dust accumulation or recycling of dusts.

Protective Clothing - Wear protective clothing, including long sleeves and gloves, to prevent repeated or prolonged skin contact.

Eye Protection - Chemical splash goggles designed in compliance with OSHA regulations are recommended. Consult your safety equipment supplier.

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Performance Packaging

ISO 9002

MATERIAL SAFETY DATA SHEET -- September 28, 1998
SORB-IT®
Packaged Desiccant

SECTION IX -- SPECIAL PRECAUTIONS

Avoid breathing dust and prolonged contact with skin. Silica gel dust causes eye irritation and breathing dust may be harmful.

* No Information Available

HMIS (Hazardous Materials Identification System) for this product is as follows:

Health Hazard	0
Flammability	0
Reactivity	0
Personal Protection	HMIS assigns choice of personal protective equipment to the customer, as the raw material supplier is unfamiliar with the condition of use.

DECLARATION OF CONFORMITY

CE
ISM1-A

Application of Council Directive:	89/336/EEC – The EMC Directive 73/23/EEC – The Low Voltage Directive
Manufacturer's Name:	Isco, Inc.
Manufacturer's Address:	4700 Superior, Lincoln, Nebraska 68504 USA Mailing Address: P.O. Box 82531, Lincoln, NE 68501
Equipment Type/Environment:	Laboratory Equipment for Light Industrial/Commercial Environments
Trade Name/Model No:	2103 Modem Module
Year of Issue:	2001
Standards to which Conformity is Declared:	EN 61326-1998 EMC Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use EN 60950 Safety Requirements for Information Technology Equipment FCC Part 68

Standard	Description	Severity Applied	Performance Criteria
EN61000-4-2	Electrostatic Discharge	Level 2 - 4kV contact discharge Level 3 - 8kV air discharge	B B
EN61000-4-3	Radiated RF Immunity	80 MHz to 1000MHz 80% AM at 1kHz Level 1 – 10V/m	B
EN61000-4-4	Electrical Fast Transient	Level 1 – 1kV on I/O lines	B
EN61000-4-5	Surge on I/O Lines	1kV common mode, 0.5KV differential mode	B
EN61000-4-6	Conducted RF on I/O lines	150 kHz to 80 MHz, 3V rms, 80% modulated	B
CISPR11/ EN 55011	RF Emissions	Group 1, Class A Industrial, Scientific, and Medical Equipment	

We, the undersigned, hereby declare that the design of the equipment specified above conforms to the above Directive(s) and Standards as of July 1, 2001.

Bill Foster
USA Representative

Isco

Bill Foster
Director of Engineering
Isco, Inc.
4700 Superior Street
Lincoln, Nebraska 68504

Phone: (402) 464-0231
Fax: (402) 464-4543

60-2002-156
Rev

Michael Teutscher
European Authorized Representative

Isco
STIP

Contact: Dr. Dirk Köppenkastrop
Geschäftsführer Managing Director
STIP ISCO GmbH

Siemensstraße 2
64823 Groß-Umstadt

Telefon: 06078 7 86-82
Telefax: 06078 7 86-88

DECLARATION OF CONFORMITY

CE

ISM1-A

Application of Council Directive:	89/336/EEC – The EMC Directive 73/23/EEC – The Low Voltage Directive
Manufacturer's Name:	Isco, Inc.
Manufacturer's Address:	4700 Superior, Lincoln, Nebraska 68504 USA Mailing Address: P.O. Box 82531, Lincoln, NE 68501
Equipment Type/Environment:	Laboratory Equipment for Light Industrial/Commercial Environments
Trade Name/Model No:	2191 Battery Module
Year of Issue:	2001
Standards to which Conformity is Declared:	EN 61326-1998 EMC Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use EN 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use.

Standard	Description	Severity Applied	Performance Criteria
EN61000-4-2	Electrostatic Discharge	Level 2 - 4kV contact discharge Level 3 - 8kV air discharge	B B
EN61000-4-3	Radiated RF Immunity	80 MHz to 1000MHz 80% AM at 1kHz Level 1 – 10V/m	B
EN61000-4-4	Electrical Fast Transient	Level 1 – 1kV on I/O lines	B
EN61000-4-5	Surge on I/O Lines	1kV common mode, 0.5KV differential mode	B
EN61000-4-6	Conducted RF on I/O lines	150 kHz to 80 MHz, 3V rms, 80% modulated	B
CISPR11/ EN 55011	RF Emissions	Group 1, Class A Industrial, Scientific, and Medical Equipment	

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60-2002-158
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64823 Groß-Umstadt

Telefon: 06078 7 86-82
Telefax: 06078 7 86-88

*Isco One Year Limited Factory Service Warranty **

Isco warrants covered products against failure due to faulty parts or workmanship for a period of one year (365 days) from their shipping date, or from the date of installation by an authorized Isco Service Engineer, as may be appropriate.

During the warranty period, repairs, replacements, and labor shall be provided at no charge. Isco's liability is strictly limited to repair and/or replacement, at Isco's sole discretion.

Failure of expendable items (e.g., charts, ribbon, tubing, glassware, seals and filters), or from normal wear, accident, misuse, corrosion, or lack of proper maintenance, is not covered. Isco assumes no liability for any consequential damages.

Isco specifically disclaims any warranty of merchantability or fitness for a particular purpose.

This warranty applies only to products sold under the Isco trademark and is made in lieu of any other warranty, written or expressed.

No items may be returned for warranty service without a return authorization number issued from Isco.

This warranty does not apply to the following products: Process Analyzers, SFX 3560 SFE Extractor, 6100 VOC Sampler.

The warrantor is Isco, Inc. 4700 Superior, Lincoln, NE 68504, U.S.A.

*** This warranty applies to USA customers. Customers in other countries should contact their Isco dealer for warranty service.**

In the event of instrument problems, always contact the Isco Service Department, as problems can often be diagnosed and corrected without requiring an on-site visit. In the U.S.A., contact Isco Service at the numbers listed below. International customers should contact their local Isco agent or Isco International Customer Service.

Return Authorization

A return authorization number must be issued prior to shipping. Following authorization, Isco will pay for surface transportation (excluding packing/crating) both ways for 30 days from the beginning of the warranty period. After 30 days, expense for warranty shipments will be the responsibility of the customer.

Shipping Address: Isco, Inc. - Attention Repair Service
4700 Superior Street
Lincoln NE 68504 USA

Mailing address: Isco, Inc.
PO Box 82531
Lincoln NE 68501 USA

Phone: Repair service: (800)775-2965 (lab instruments)
(800)228-4373 (samplers & flow meters)
Sales & General Information (800)228-4373 (USA & Canada)

Fax: (402) 465-3001

Email: service@isco.com

August 2002 P/N 60-1002-040

Isco, Inc.
www.isco.com