780 4-20 mA Input Module

Installation and Operation Guide

Part #60-9003-064
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Isco, Inc.

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.

Isco is continually improving its products and reserves the right to change product specifications, replacement parts, schematics, and instructions without notice.

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

780 4-20 mA Input Module

1.1 Introduction

The 780 analog module is one of Isco's interchangeable modules for the 6700 Series wastewater samplers. The module provides connection between the sampler and non-Isco process control equipment (for example: flow meters, chlorinators, or chart recorders). The analog signal transmitted to the sampler can then be used to pace, proportion, or trigger sampling routines.

The 780 module can only be used with 6700 Series samplers. The module receives a 4 to 20 mA analog signal from a non-Isco instrument and transmits it to the sampler. The 4 to 20 mA analog signal is an industrial standard current loop for process control equipment. In the sampler, the current range of 4 to 20 mA represents percentage, with 4 mA equivalent to 0% and 20 mA equivalent to 100%.

Figure 1-1 780 Module Installed on a Sampler

1.2 Installation

To install the module:

1. Turn the sampler off.
2. Remove the connector cap in the module bay and move it aside.
3. Slide the module into the bay.
4. Push the module forward to be sure the connector is firmly seated.

☑ Note

The module must be installed on the sampler controller before the controller is turned on or programmed, and before running a program that requires a module.

To remove the module, turn the sampler off. Depress the silver spring button and pull the module from the bay. Do not use the module's cord to pull it from the bay. Pulling the cord may damage the module. Replace the connector cap attached to the controller.

⚠ WARNING

The 780 module has not been approved for use in hazardous locations as defined by the National Electrical Code. Before installing any device in a dangerous location, review the safety precautions in the back of your sampler manual. Check applicable guidelines, codes, and regulations of federal, state, city, and county agencies.

1.2.1 Installation Checklist

1. Install the module, then turn the sampler on.
2. Install the non-Isco equipment.
3. Connect the non-Isco equipment to the module (see Wiring Instructions below).
4. Program the sampler.
5. Set up the sampler (see sampler manual).
6. Run the program.

1.3 Wiring Instructions

The 780 module consists of a case and a 10-foot, non-detachable cable. The cable ends in a pig tail for splicing to the non-Isco instrument. The module is a current loop device which is wired in series with the other instrument. Connect the negative output of the non-Isco instrument to the module's black wire and the positive output to the module's red wire. The module will only record accurate measurements if the wire polarity is correct.

1.4 Operation

When a module is installed, the sampler adds the necessary display screens for programming. These screens appear in Figure 1-2 and Figure 1-3.

You must have the module installed before turning the controller on. When the controller is turned on, it looks for a module. If the module is installed after the controller is turned on, you will not be able to program the sampler to use the module.

The module receives an analog 4-20 mA signal, measures the current, and sends the reading to the sampler. The sampler then converts the reading to a percentage. The user selects whether it will display Level, Flow Rate, or Percentage. When Flow is

selected, the current range of 4-20 mA represents flow rate, with 4 mA equivalent to 0% flow and 20 mA equivalent to 100% of the maximum flow value entered.

For more information about programming, see the Programming section of the sampler manual.

> **☑ Note**
>
> An asterisk (*) appears next to the flow value if the module was unable to take a reading. If an asterisk appears, the reading displayed is the last available reading.

1.4.1 Programmed Enable

When a 4-20 mA module is installed, an additional enable option is available. Depending on which display option you select, this option will be LEVEL, FLOW RATE, or PERCENT. For more information about programming, see Sampler Enable in the sampler manual.

1.5 Maintenance

The 780 module has no user-serviceable parts. Its 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 the Isco Customer Service department for information on returning it to the factory.

1.6 Technical Specifications

Technical specifications for the 780 module are listed in the table below:

Table 1-1 Technical Specifications for the 780 Analog Module

Weight	1.1 lbs (0.5 kg)
Dimensions	4.9 x 5.7 x 2.0 inches (12.4 x 14.5 x 5.1 cm)
Material	Polystyrene
Operating Temperature	32° to 120° F (0° to 49° C)
Storage Temperature	0° to 140° F (-18° to 60° C)
Enclosure	NEMA 4X, and 6, IP 67
Power	Provided by the sampler.
Memory	Nonvolatile programmable Flash. Field updatable through the sampler.
Readings	Programmable through sampler at 1, 2, 5, 10, 15, and 30 minute intervals.
Accuracy	± 0.5%
Resolution	± 0.1%
General Notes: All weights may vary ± 0.2 lb (± 0.1 kg). All lengths may very ± 1/4 inch (± 0.64 cm).	

1.6.1 Flash Memory and Software Upgrades

The 780 module has Flash memory to store its software. With Flash technology, you can upgrade your module's software without sending it back to the factory or replacing the chip. Simply connect a computer to the sampler with the module installed and run the Flash Update program.

> **Note**
>
> When updating the Flash memory, the module must be attached to the sampler and power must be supplied to the sampler.

1.6.2 How to Get Help

Contact information can be found in the Foreword of this manual.

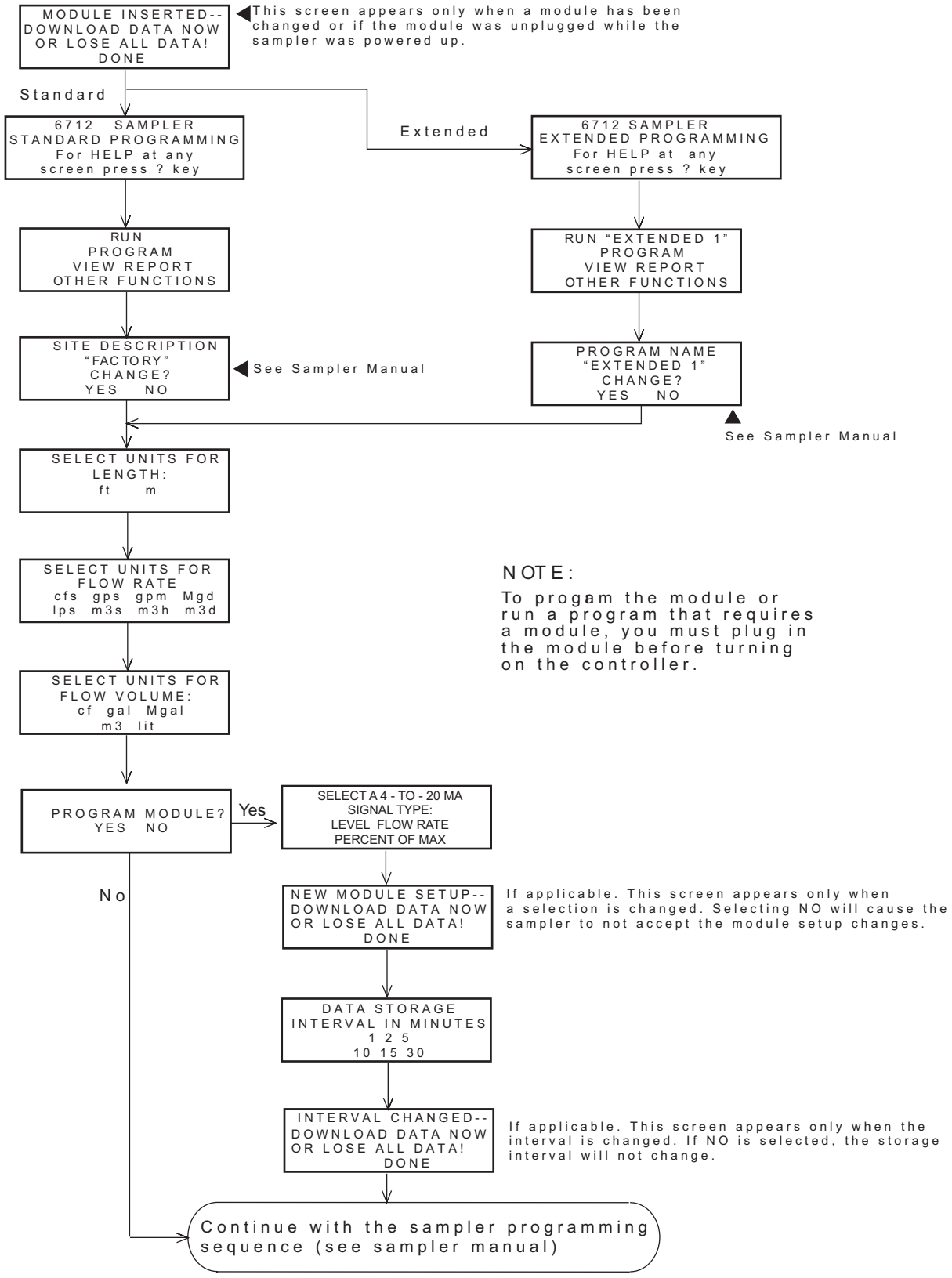

Figure 1-2 Programming the Sampler to use the 780 4-20 mA Module

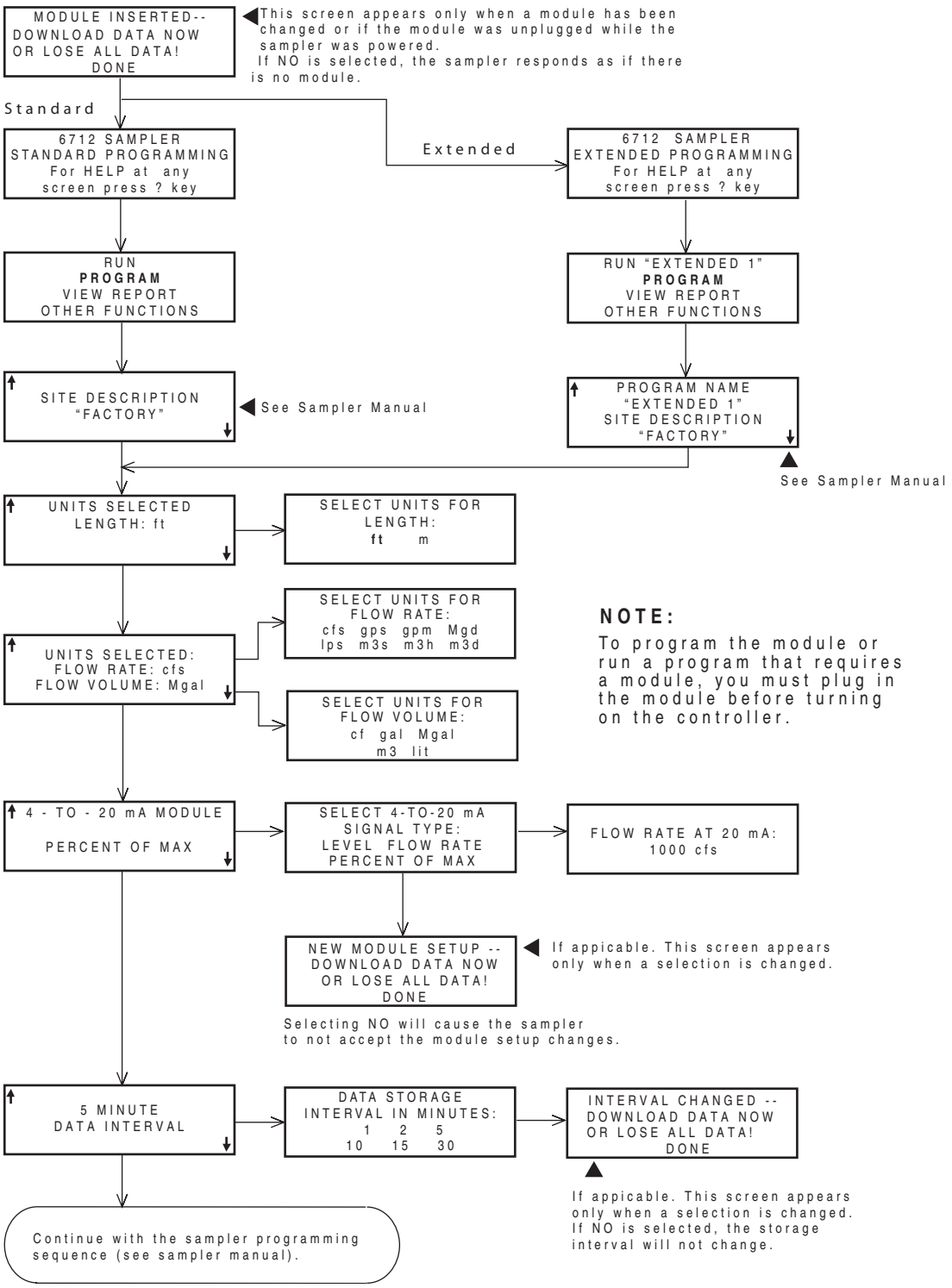

Figure 1-3 Quick View: Programming the Sampler to Use the 780 4-20 mA Module

*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

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