

780 4-20 mA Input Module

Installation and Operation Guide



Part #60-9003-064
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Foreword

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

Although Teledyne 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 e-mail the Teledyne Isco Technical Service Department for assistance. 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.

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

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

Contact Information

Customer Service

Phone: (800) 228-4373 (USA, Canada, Mexico)
(402) 464-0231 (Outside North America)
Fax: (402) 465-3022
Email: IscoCSR@teledyne.com

Technical Support

Phone: (800) 775-2965 (Analytical)
(866) 298-6174 (Samplers and Flow Meters)
Email: IscoService@teledyne.com

Return equipment to: 4700 Superior Street, Lincoln, NE 68504-1398

Other Correspondence

Mail to: P.O. Box 82531, Lincoln, NE 68501-2531
Email: IscoInfo@teledyne.com
Web site: www.isco.com

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 vary ± 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.

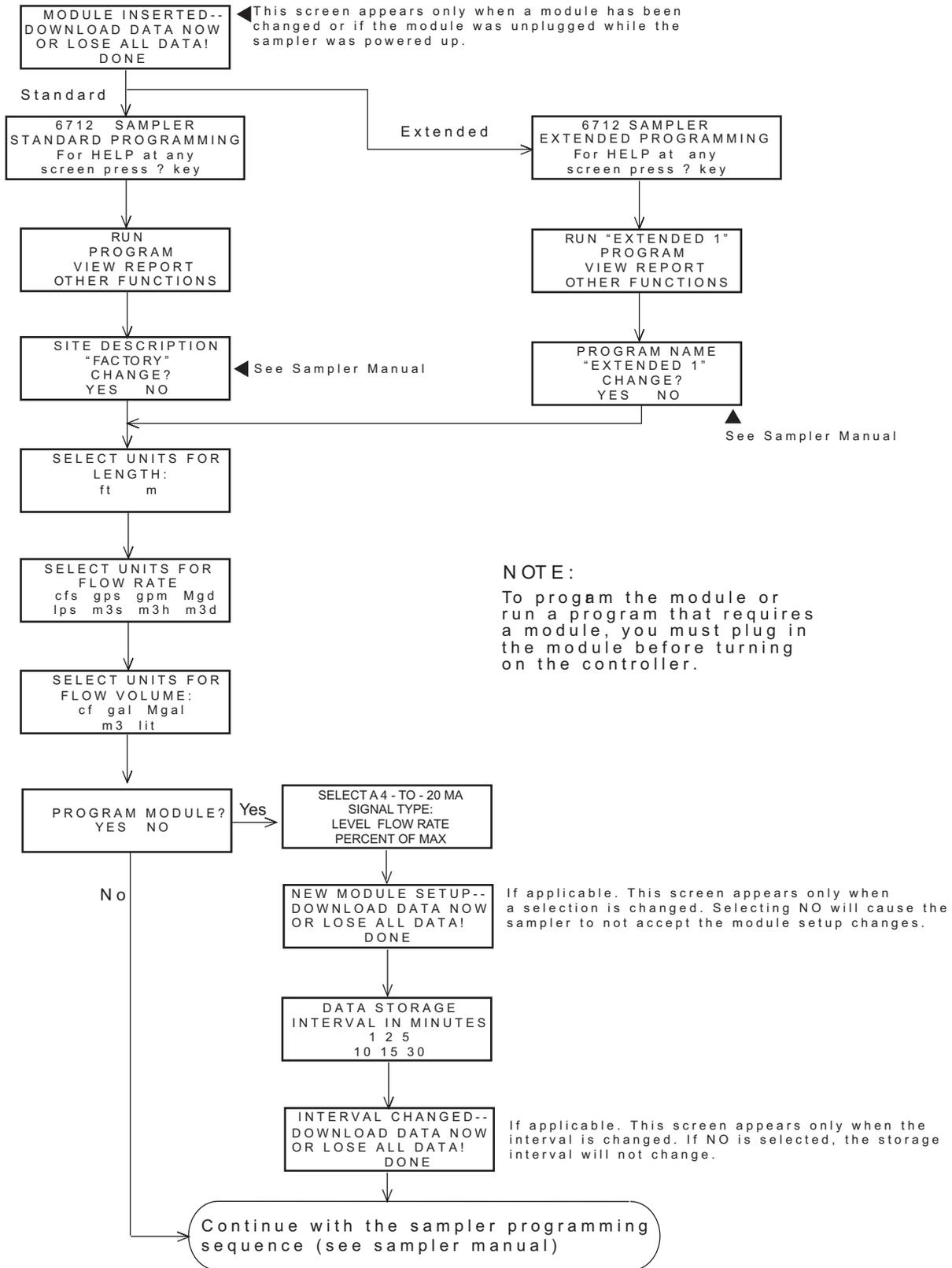


Figure 1-2 Programming the Sampler to use the 780 4-20 mA Module

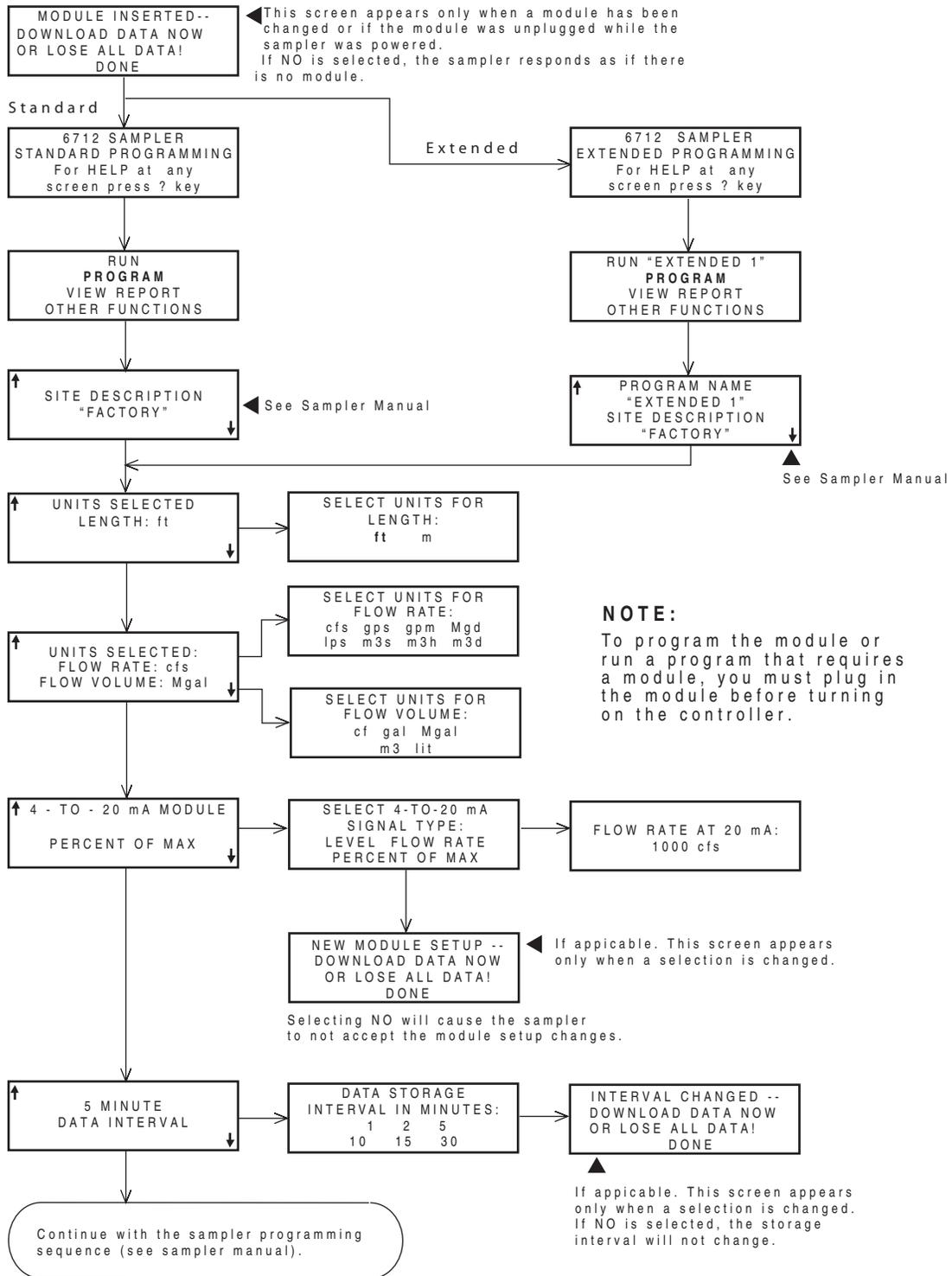


Figure 1-3 Quick View: Programming the Sampler to Use the 780 4-20 mA Module

Teledyne Isco One Year Limited Warranty*

Factory Service for Teledyne Isco Flow Meters, Waste Water Samplers, and Syringe Pumps

This warranty exclusively covers Teledyne Isco instruments, providing a one-year limited warranty covering parts and labor.

Any instrument that fails during the warranty period due to faulty parts or workmanship will be repaired at the factory at no charge to the customer. Teledyne Isco's exclusive liability is limited to repair or replacement of defective instruments. Teledyne Isco is not liable for consequential damages.

Teledyne Isco will pay surface transportation charges both ways within the 48 contiguous United States if the instrument proves to be defective within 30 days of shipment. Throughout the remainder of the warranty period, the customer will pay to return the instrument to Teledyne Isco, and Teledyne Isco will pay surface transportation to return the repaired instrument to the customer. Teledyne Isco will not pay air freight or customer's packing and crating charges. This warranty does not cover loss, damage, or defects resulting from transportation between the customer's facility and the repair facility.

The warranty for any instrument is the one in effect on date of shipment. The warranty period begins on the shipping date, unless Teledyne Isco agrees in writing to a different date.

Excluded from this warranty are normal wear; expendable items such as charts, ribbon, lamps, tubing, and glassware; fittings and wetted parts of valves; and damage due to corrosion, misuse, accident, or lack of proper maintenance. This warranty does not cover products not sold under the Teledyne Isco trademark or for which any other warranty is specifically stated.

No item may be returned for warranty service without a return authorization number issued by Teledyne Isco.

This warranty is expressly in lieu of all other warranties and obligations and Teledyne Isco specifically disclaims any warranty of merchantability or fitness for a particular purpose.

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

*** This warranty applies to the USA and countries where Teledyne Isco Inc. does not have an authorized dealer. Customers in countries outside the USA, where Teledyne Isco has an authorized dealer, should contact their Teledyne Isco dealer for warranty service.**

Before returning any instrument for repair, please call, fax, or e-mail the Teledyne Isco Service Department for instructions. Many problems can often be diagnosed and corrected over the phone, or by e-mail, without returning the instrument to the factory.

Instruments needing factory repair should be packed carefully, and shipped to the attention of the service department. Small, non-fragile items can be sent by insured parcel post. **PLEASE BE SURE TO ENCLOSE A NOTE EXPLAINING THE PROBLEM.**

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

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

Phone: Repair service: (800) 775-2965 (lab instruments)
(866) 298-6174 (samplers & flow meters)
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