

City Council Staff Report

June 17, 2015

Item 4

Applicant: Public Works

Director

Prepared by: Gary Calder

Public Hearing: No

REQUEST

Consideration of a Resolution authorizing the Public Works Director to purchase 3 portable sewer monitoring stations, to be used to gather information on any ground water infiltration within the existing sewer collection system.

BACKGROUND AND PROJECT DESCRIPTION

Ground infiltration within the city system can be a very costly to all the residents of the city. The purpose of these meters is, to begin to gather data at certain suspect areas. The meters are portable and extremely accurate as well having improved data gathering abilities. Once data is available this will allow the public works department and administration to begin to resolve issues within the system.

Attached is a quote from-Teledyne ISCO/Electronic Data Solutions.

The cost for 3 meters and misc. attachments are \$29,560.23. The cost of these items has been budgeted in the current budget under 53-74-47

RECOMMENATION

Approve the application.



ADDRESS PURCHASE ORDERS TO:

Teledyne ISCO
 c/o Electronic Data Solutions
 PO Box 82531
 Lincoln, NE 68501
 Fax (402) 465-3022
 Teledyne ISCO Federal ID # 47-0461807
 Teledyne ISCO DUNS # 00-727-4194

PRICE QUOTATION

Quote No. JRMQ34552
 Date 06/08/15
 Quotation By: Steve Combe
 (208) 324-8006

Quotation For:

Mapleton City Corporation
 Gary Calder
 1405 West 1600 North

Phone (801)489-6253
 Fax
 Email gcalder@mapleton.org

Special Notes

Your Teledyne ISCO Representative:



P. O. Box 842
 Liberty, UT 84310
 Phone: 801-791-3407
 Fax (208)324-8015
 www.elecdata.com
 Local Area Support for Montana, Idaho, Utah & NE NV

Qty	Part No.	Description	Unit Price	Extended Price
		Flow Meter, Battery Module, Sensor & Cable		
1	68-2050-002	2150 Flow Module with 2191 Battery Module. Includes Area Velocity Sensor with 10 ft. (3 m) level measurement range and 25 ft. (7.6 m) cable, 2 battery holders, and carrying handle with suspension strap. Also includes instruction manual and coupon for free Isco Open Channel Flow Measurement Handbook. Requires Flowlink software and computer connect cable (sold separately).	\$4,161.00	\$4,161.00
2	682160060-ISCO 3165	Portable 2160 LaserFlow™ System. This system includes TIENet® 360 LaserFlow Sensor with 32.8 ft (10 m) cable, built-in Ultrasonic level sensor, 2160 LaserFlow module, 2191 Battery module with carrying handle and suspension strap. The system includes one 2100 Series maintenance kit, instruction manual, and coupon for free Isco Open Channel Flow Measurement Handbook. Requires wall mount or temporary mount for LaserFlow sensor, Flowlink software and computer connect cable.	\$10,478.70	\$20,957.40
		SubTotal		\$25,118.40
		Communications		
1	68-2540-200	Flowlink 5.1 Software, two user licenses. For retrieving flow, rainfall, parameter and sample data from Isco 2100 Series Modules and 2101 Field Wizard, 4100 Series Flow Loggers, 4200 Series Flow Meters, 6700 Series Samplers, 676 Logging Rain Gauge System, and 581 Rapid Transfer Device. Stores data in a Microsoft Access database and generates a variety of graphs and tables from stored data. Data can also be exported in ASCII format for analysis by programs such as Microsoft Excel, HTML format for viewing in a web browser, and PDF format for viewing in Adobe Reader. Operates on Windows 98, ME, NT, 2000, or	\$1,952.25	\$1,952.25

Qty	Part No.	Description	Unit Price	Extended Price
1	60-2004-507	XP. Supplied on CD-ROM. Software supports multiple languages, one of which is selected during installation. USB Communication Cable, 10 ft. (3 m). Connects 2100 Series Module top connector to PC with USB connector.	\$232.75	\$232.75
		SubTotal		\$2,185.00
		Street Level Installation Tool, Rings & Mounts		
1	60-3204-012	Street Level Installation Tool Multi-section pole. Includes one 2-1/2 ft. pole section with adapter for attaching mounting ring, six 2-1/2 ft. pole sections, and instruction manual.	\$598.50	\$598.50
1	60-3204-015	Street Level Installation Tool Mounting Ring for 8 inch diameter pipe. Includes strap.	\$204.25	\$204.25
1	60-3204-029	Sensor carrier for attaching Low Profile Area Velocity Sensor to Isco Mounting Rings.	\$46.08	\$46.08
2	60-4364-003	Permanent wall mount for TIENet 360 LaserFlow sensor.	\$541.50	\$1,083.00
		SubTotal		\$1,931.83
		SubTotal		\$29,235.23
		Sales Tax		\$0.00
		Shipping		\$325.00
		Total		\$29,560.23

Terms and Conditions

Prices are good for 30 days. Shipment will be made by Ground Freight, FOB Factory/Shipping Point, Freight Prepaid and Added to invoice. Freight will be charged according to the table listed below.

Payment terms are Net 30 days upon approved credit from Isco. VISA, MasterCard, and American Express are also accepted.

Operation and Maintenance Manual Policy and Merchandise Return Policy listed below.

Please ADDRESS your purchase order to:

**Teledyne ISCO
c/o Electronic Data Solutions
PO Box 82531
Lincoln, NE 68501
Fax (402) 465-3022**

For questions regarding this price quotation, contact Electronic Data Solutions at (801) 745-1437.

FREIGHT POLICY

Contiguous U.S.A For shipments within the contiguous U.S.A, Teledyne Isco will select the carrier and shipping mode. Teledyne Isco will apply standardized freight charges based on total merchandise value of the shipment (see Table 1). If the order includes merchandise listed in Table 2, a "per unit" ground freight charge will be applied instead of the charge based on total merchandise value, regardless of other units and/or parts on the same order.

Customers may opt to specify a carrier or shipping modes. If the customer specifies an expedited method of shipment or specifies a collect shipment, Tables 1 and 2 will not be used. For expedited shipments, the actual charges will be prepaid by Teledyne Isco and added to the invoice. When shipping collect, the carrier will directly bill the customer.

Total Price of Merchandise	Standard Freight
\$0 -- \$49.99	\$12.50
\$50 -- \$249.99	\$17.50
\$250 -- \$999.99	\$20.00
\$1,000 -- \$2,499.99	\$28.00
\$2,500 -- \$4,999.99	\$54.50
\$5,000 -- \$12,499.99	\$91.00
\$12,500 -- \$24,999.99	\$183.00
\$25,000 -- \$49,999.99	\$325.00
\$50,000 -- \$99,999.99	\$446.00
Over \$100,000.00	\$520.00 Flat Fee
Refrigerators	\$205.00 per unit

OPERATION AND MAINTENANCE MANUALS POLICY

Teledyne Isco will provide up to ten standard instruction (operation and maintenance) manuals per model, per order (not per unit) upon request, at no extra cost. All manuals requested in excess of ten will be provided at Isco's current list price. Standard manual policy for Domestic Environmental Products is as follows unless otherwise requested:

- 1 to 2 units: One printed manual with each unit.
- 3 to 9 units: Three printed manuals plus one Manual Library CD will be supplied.
- 10 or more units: Five printed manuals plus one Manual Library CD will be supplied.

MERCHANDISE RETURN POLICY

Please call (800) 228-4373 for a return authorization number. Isco's restocking charges are as follows:
 0 -- 14 days: None, if items are new and unused.
 15 -- 60 days: 20%
 Over 60 days: No credit without management approval.

Isco Non-Contact LaserFlow™ Velocity Sensor

The LaserFlow™ remotely measures flow in open channels with non-contact Laser Doppler Velocity technology and non-contact Ultrasonic Level technology. The sensor uses advanced technology to measure velocity with a laser beam at single or multiple points below the surface of the wastewater stream. (*Patent Pending*)

The LaserFlow is ideal for a broad range of wastewater monitoring applications. It is compatible with both the Teledyne Isco Signature Flow Meter and the Teledyne Isco 2160 LaserFlow Module, depending on the type of installation.

During submerged conditions, flow measurement continues without interruption with optional Doppler Ultrasonic Area Velocity technology.

With its specially designed mounting bracket in place, the LaserFlow can be deployed and removed from above ground, eliminating unsafe and time-consuming confined space entry. A variety of communication options enable programming and data retrieval from a remote location. Information about data quality can be recorded and transmitted alongside the flow data.

Applications

- ◆ Permanent and portable flow measurement for CSO, SSO, I&I, SSEs, CMOM, and other sewer monitoring programs.
- ◆ Shallow flow measurement in large and small pipes.
- ◆ Wastewater treatment plant influent, process, and effluent flow measurement.
- ◆ Industrial process and discharge flow measurement
- ◆ Stormwater conveyance and outfall (sunshade required)
- ◆ Irrigation canals and channels (sunshade required)



Standard Features

- ◆ Non-contact velocity and level measurement
- ◆ Single or Multiple Point measurement below the liquid surface
- ◆ Robust, submersible enclosure with IP68 ingress protection
- ◆ No deadband from measurement point in non-contact level and velocity measurements.
- ◆ No need for manual velocity profiling
- ◆ Bidirectional velocity measurement

Options and Accessories

- ◆ Flow measurement during submerged conditions via Ultrasonic Doppler technology
- ◆ Redundant flow measurement w/ simultaneous Continuous Wave Doppler or Ultrasonic Level Sensing
- ◆ Installation in Class 1 Zone 1 areas (pending approval)

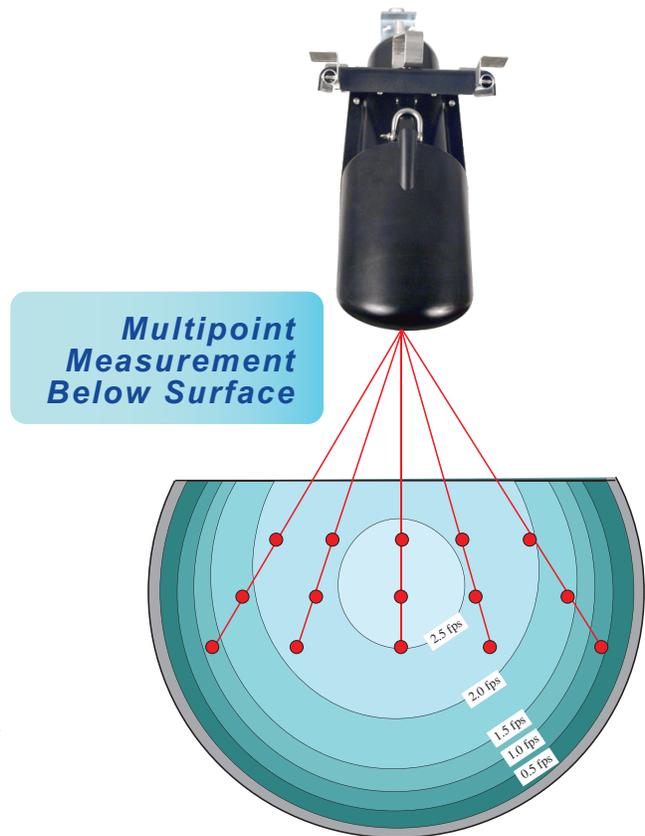


Single- or Multipoint Measurement

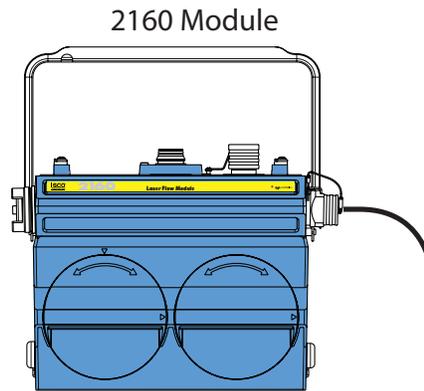
Depending on your application needs, the LaserFlow™ device can be programmed to take velocity measurements at single or multiple points below the water's surface, producing an accurate mean velocity reading.

System Versatility

From industrial applications to manhole installations, the LaserFlow's versatile configuration options give you the flexibility to measure flow in most open channel applications. The sensor is compatible with both the **Isco Signature™ Flow Meter** for permanent discharge compliance monitoring, and the **Model 2160 LaserFlow Module** for everything from portable surveys to permanent installations. Both flow meters have a variety of communication options for remote data access and programming, eliminating the need for frequent site visits.

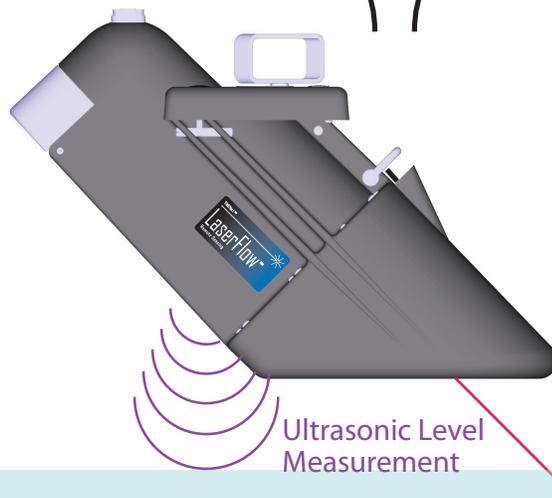


AC Powered Sites



Battery Powered Sites

OR

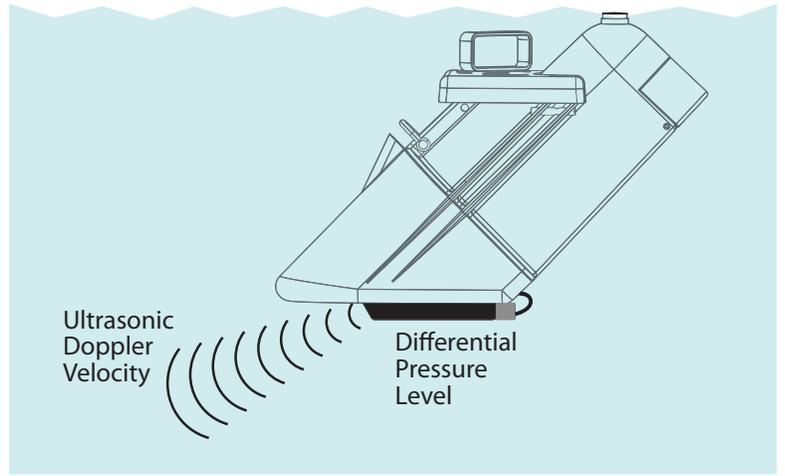


Ultrasonic Level Measurement

Laser Doppler Velocity Measurement

Optional Submerged Functionality

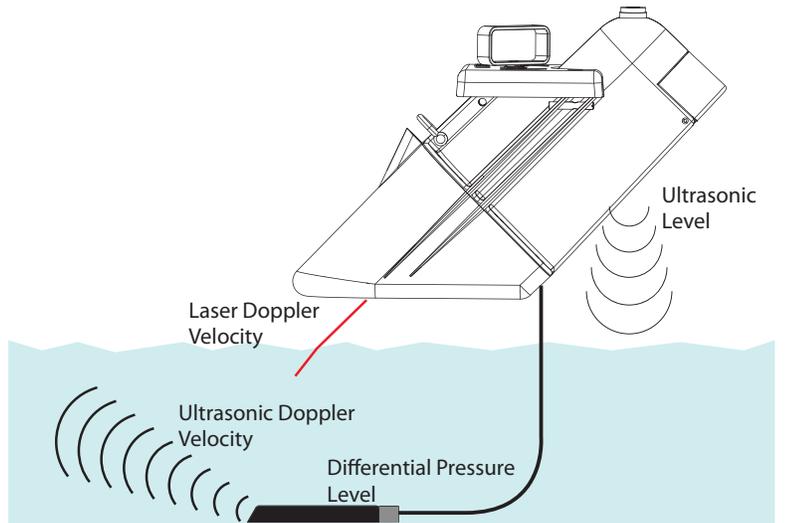
During submerged conditions, flow measurement continues without interruption with the optional TIENet™ 350 Area Velocity sensor, which combines Doppler Ultrasonic velocity measurement with Differential Pressure level measurement.



Optional Redundant Measurement

For redundant flow measurement at critical monitoring sites, a unique flexibility is added by the optional TIENet 350 AV sensor when mounted at the bottom of the pipe.

The 350 provides redundant velocity, level, and flow data from the same site as the LaserFlow device.



Easy and Secure Retrieval/Replacement Without Manhole Entry

Following initial installation and adjustment, the sensor can be installed or removed as needed without manhole entry in most situations, using the optional retrieval arm (shown at left) to grasp the handle.

The handle's simple but effective locking mechanism (shown below) holds the sensor firmly in place, and is easy to engage and release from above ground.



Specifications

Primary Measurement: TIENet™ LaserFlow™ Device

Size (HxWxL)	38.01 x 26.21 x 56.7 cm (14.96 x 10.3 x 22.32 in)
Weight	8.7 kg (19.2 lbs)
Materials	Conductive Carbon Filled ABS, SST, Conductive Kynar, Anodized Aluminum, UV-Rated PVC
Cable Lengths	5, 10, 15, or 23 m (16.4, 32.8, 49.2, or 75.5 ft)
Enclosure	IP68
Certifications	CE EN61326; FDA CDRH 21CFR1040; IEC 60825-1
Temperature Range	Operating: 0 to 60 °C (32 to 140 °F) Storage: -40 to 60 °C (-40 to 140 °F)
Power Required	Input voltage: 8 to 26 VDC 12VDC Nominal
Flow Accuracy	±5% of Reading. (Typical, under normal flow conditions)

Velocity

Technology	Non-Contact Laser Doppler
Measurement Range	-4.6m/s to 4.6 m/s (-15 ft/s to 15 ft/s)
Velocity Measurement	Bi-Directional ^a
Accuracy	±0.5% of reading ±0.03 m/s (0.1 ft/s)
Minimum Velocity	0.25 m/s (0.8 ft/s)

Level

Technology	Non-Contact Ultrasonic
Measurement Range	0 to 3 m (0 to 10 ft) from measurement point
Accuracy @ 22 °C (72 °F)	±0.006 m (0.02 ft) at ≤1 ft level change ±0.012 m (0.04 ft) at >1 ft level change
Temperature Coefficient within compensated range	± 0.0002 x D (m) per degree C ± 0.00011 x D (ft) per degree F (Where D = Distance from transducer to liquid surface)
Beam Angle	10° (5° from center line)
Ultrasonic Signal	50KHz

a. Turbidity > 20 NTU; Distance from liquid surface to bottom of sensor < 48 inches.

Optional Secondary Measurement: TIENet™ 350 AV Sensor

Probe Size (HxWxL)	19 x 33 x 152 mm (0.75 x 1.3 x 6.0 in)
Materials	Sensor: Epoxy, chlorinated CPVC, SST Cable: UV-Rated PVC
Certifications	CE EN61326
Temperature Range	0 to 70 °C (32 to 158 °F)

Velocity

Technology	Submerged Continuous Wave Doppler Ultrasonic
Measurement Range	-1.5 to 6.1 m/s (-5 to 20 ft/s)
Velocity Measurement	Bi-Directional
Accuracy	±0.03 m/s (±0.1 ft/s) from -5 to 5 ft/s ±2% of reading from 5 to 20 ft/s, Uniform velocity profile
Minimum Depth	25 mm (0.8 ft)
Frequency	500 kHz

Level

Technology	Submerged Differential Linear Pressure Transducer
Measurement Range	0.01 to 3.05 m (0.033 to 10 ft)
Accuracy	± 0.01%FS ^b
Maximum Depth	10.5 m (34 ft)
Stability	±0.007 m/yr (±0.023 ft/yr)

^b Maximum non-linearity, hysteresis, & temperature error from actual liquid level.

Contact your Teledyne Isco representative for complete ordering information.



Water is life. Protect it.

Teledyne Isco

4700 Superior Street
Lincoln, NE 68504 USA
Tel: (402) 464-0231

USA and Canada (800) 228-4373
Fax: (402) 465-3022
E-Mail: IscoInfo@teledyne.com
Teledyne Isco reserves the right to change specifications without notice.
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**Certified
ISO 9001**

Isco 2160 LaserFlow™ Module

The 2160 LaserFlow™ Module uses non-contact Laser Doppler Velocity technology and non-contact Ultrasonic Level technology to remotely measure open-channel flow. The sensor has advanced technology to measure velocity with a laser beam at single or multiple points below the surface of the wastewater stream.

The LaserFlow is ideal for a broad range of wastewater monitoring applications.

During submerged conditions, flow measurement continues without interruption with optional Doppler Ultrasonic Area Velocity technology.

In field use, the 2160 is typically powered either by two alkaline, or Isco Rechargeable Lead-acid batteries, within a 2191 Battery Module. Other power options (including solar) are available.

Applications

- ◆ Portable or permanent flow measurement for CSO, SSO, I&I, SSEs, CMOM, and other sewer monitoring programs.
- ◆ Shallow flow measurement in large and small pipes.
- ◆ Wastewater treatment plant influent, process, and effluent flow measurement.
- ◆ Stormwater conveyance and outfall (sunshade required)
- ◆ Irrigation canals and channels (sunshade required)



The LaserFlow™ sensor transmits level and velocity data back to the 2160 module.



Standard Features

- ◆ Rugged, submersible enclosure fulfills IP68 enclosure requirements.
- ◆ The quick-connect sensor can be easily removed and interchanged in the field without requiring recalibration.
- ◆ Up to four 2100 Series flow modules can be networked by stacking and/or extension cables.
- ◆ Modbus output interface

Options and Accessories

- ◆ Flow measurement during submerged conditions via Ultrasonic Doppler technology
- ◆ Redundant flow measurement w/ simultaneous Continuous Wave Doppler and/or Ultrasonic Level Sensing
- ◆ Landline and cell phone options
- ◆ Analog output module

Flowlink® Data Analysis

Isco Flowlink® Software is a powerful tool for analyzing flow and water quality data. It provides site setup, data retrieval, and comprehensive data analysis, as well as advanced reporting and graphing. See separate data sheets for details on Flowlink and Flowlink Pro software.

Specifications – 2160 LaserFlow™ Module

Size (H×W×D)	2.9 × 11.3 × 7.5 in.	7.4 × 28.7 × 19.1 cm
Weight Alone	2.0 lbs	0.9 kg
Weight w/ 2191 Battery Module	6.0 lbs	2.7 kg
Material	High-impact polystyrene, Stainless steel	
Enclosure (self-certified)	IP 68	
Power	7.0 to 16.6 VDC, Typical operating current 25 mA at 12 VDC Nominal, 1.0mA standby.	
Typical Battery Life ^a (2160 module w/ 2191 Battery Module & LaserFlow Sensor)	Data Storage Interval	Alkaline Batteries
	15 minutes	12 weeks
	5 minutes	7 weeks
Program Memory	Non-volatile, programmable flash; can be updated using PC without opening enclosure; retains user program after updating	
Number of Modules	Up to 4, field interchangeable	
Maximum Distance between Remote Modules	3300 ft	1000 m
Wiring between Modules	Twisted pair for communication, pair for power, gauge dependent on distance	
Total Flow Calculations	Up to 2 independent level-to-area and/or level-to-flow rate conversions, net, positive or negative, based on either flow rate conversion	
Level-to-Area Conversions		
Channel Shapes	Round, U-shaped, rectangular, trapezoidal, elliptical, with silt correction	
Data Points	Up to 50 level-area pairs	
Level-to-Flow Rate Conversions		
Weirs	V-notch, rectangular, Cipolletti, Isco Flow Metering Inserts, Thel-Mar	
Flumes	Parshall, Palmer-Bowlus, Leopold-Lagco, trapezoidal, H, HS, HL	
Manning Formula	Round, U-shaped, rectangular, trapezoidal	
Data Points	Up to 50 level-flow rate points	
Equation	2-term polynomial	
Data Storage Memory	Non-volatile flash; retains stored data during program updates	
Capacity	798,000 bytes (up to 158,000 readings, equal to over 270 days of level, velocity, flow rate, ultrasonic signal, Doppler frequency, and input voltage readings at 15 minute intervals).	
Data Types	Flow Rate, Flow Rate 2, Total Flow, Input Voltage LaserFlow: Level, Distance, Velocity, Optional 350 AV: Level, Temperature, Velocity	
Storage Mode	Rollover with variable rate data storage	
Storage Interval	15 or 30 seconds; 1, 2, 5, 15, or 30 minutes; or 1, 2, 4, 12, or 24 hours	
Bytes per reading	5	
Setup and Data Retrieval	Serial connection to IBM PC or compatible computer with Isco Flowlink software	
Baud Rate	38,400	
Temperature range	-40° to 140°F	-40° to 60°C Operating and Storage

a. Specification for Eveready Energizer alkaline lantern batteries, model #529, Isco part #340-2006-02.



Teledyne Isco

4700 Superior Street USA and Canada (800) 228-4373
 Lincoln, NE 68504 USA Fax: (402) 465-3022
 Tel: (402) 464-0231 E-Mail: IscoInfo@teledyne.com
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