



## Isco Flowlink® 5 Software

Isco's Flowlink is the premier flow data management software. Flowlink 5's advanced analysis, editing, and reporting, assure continued industry leadership.

### Easy instrument configuration

Set up the following Isco instruments — on-site or remotely:

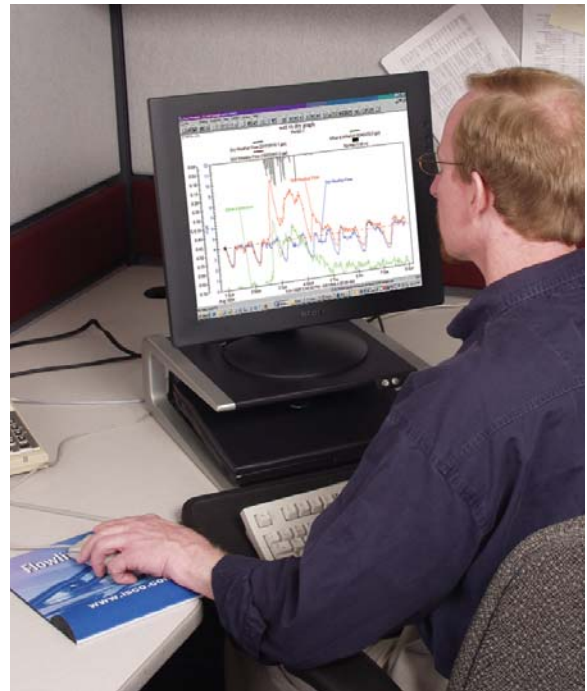
- ▶ 2100 Series Flow Modules
- ▶ 4100 Series Flow Loggers
- ▶ 4200 Series Flow Meters
- ▶ 676 Logging Rain Gauge systems

Enhance battery life by scheduling specific “run times” for communication modules.

Save configuration time by cloning when a flowmeter is replaced, or conditions are similar at another site.

### Data handling options

Download data on site to your laptop PC, Isco 581 Rapid Transfer Device (RTD), or Isco 2101 Field Wizard.



Collect data from 2100 Series modules remotely via an Isco 2102 Wireless Module, 2103 Telephone or 2103c Cell Phone Modem.

Collect data from Isco 4200 Series Flow Meters and 6700 Series Samplers with voice modems.

Automate data collection.

Display default graphs immediately after data retrieval to quickly assess site conditions.

Import CSV-formatted data from non-Isco instruments.

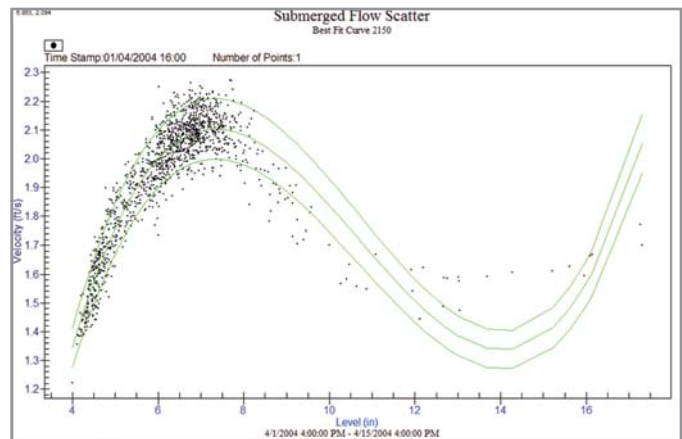
Convert Flowlink 4 files to Flowlink 5.

Archive data to a zipped file on a network drive and back up your database to insure against loss.

## Data Presentation

- ▶ Drag and drop data onto graphs and tables.
- ▶ Generate graphs with up to four panes, with multiple data types in each pane.
- ▶ Display rainfall.
- ▶ Display sample events.
- ▶ Display scatter plots. Generate a best-fit curve with limits for analysis.
- ▶ Add text boxes to label events.
- ▶ Generate vertical lines that span all panes for accurate values of different parameters at specific times.
- ▶ Generate horizontal lines to distinguish points outside limits.

### Scatter Plot

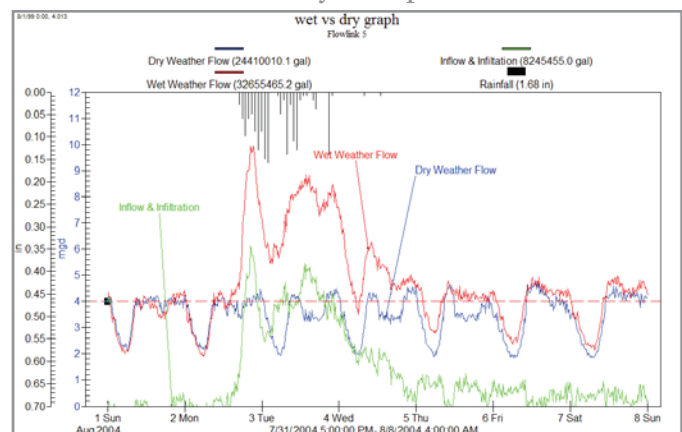


Generate flow channel performance pictures. Add upper and lower limits to indicate fitness of data by a percentage of offset, or test fitness of data using Manning Formula coefficients.

## Advanced Data Analysis

- ▶ Calculate average, minimum, maximum, and total accumulated values.
- ▶ Compare data from multiple sites.
- ▶ Use series formulas to know the relation between sites or parameters.
- ▶ Zoom vertically and horizontally.
- ▶ Generate reference curves for wet weather analysis or problem identification.
- ▶ Compare flows using the continuity equation and Manning formula.

### Wet vs. Dry Comparison



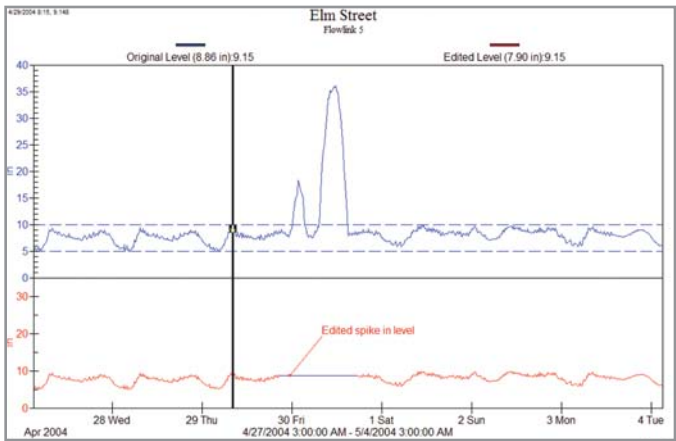
Create reference curves (blue line) for comparisons. Import rain data (inverted from top of graph) to help see the relationship between rainfall and I&I.

# Editing Capability

External noise, site conditions, etc, can adversely affect data quality. Also, data from flow meters lacking Isco's exceptional stability can be corrected for calibration or temperature drift.

- ▶ Edit data with constant offset, fixed offset, proportional, time, or auto-correct functions.
- ▶ Edit data values by dragging them to correct values or by selecting multiple data values in a block, then applying corrections.
- ▶ Adjust scatter plot data within limits, or to the centerline of the best fit curve.
- ▶ View changes in a graph or table after editing.
- ▶ Copy, paste, cut, and insert.
- ▶ Show modified data in a different color.

Edited Graph



The erroneous spikes shown above would skew calculations. Simply highlight them and click “auto-correct”.

# Reporting

- ▶ Include Flowlink graphs and tables in Microsoft Word®, Excel®, and PowerPoint® with object linking and embedding (OLE).
- ▶ Exported into CSV format for analysis in spreadsheet programs. Export graphs and tables in HTML or PDF format.
- ▶ Automatically retrieve data, print graphs and tables, import/export data, and run command-line driven programs.

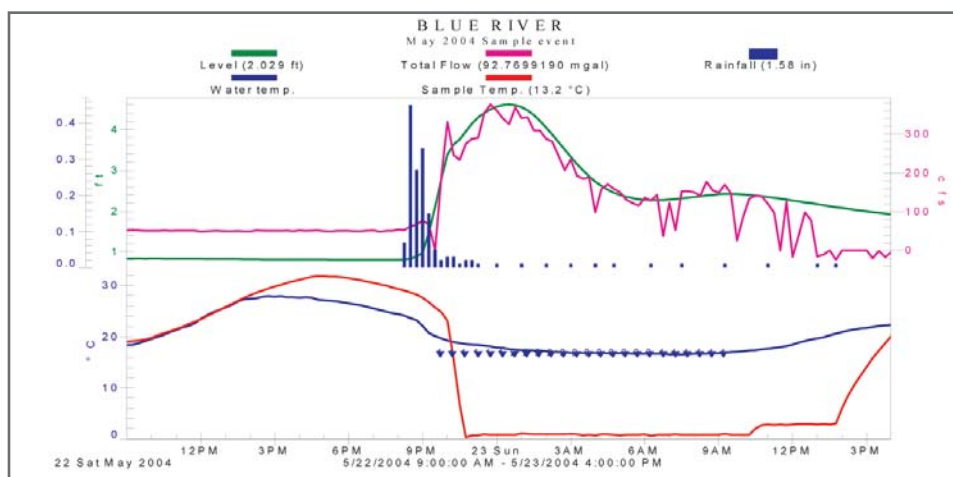
Printable Table

Min/Max/Avg Flow rates					
Flowlink 5					
Date/Time	Average Flow Rate (gpm)	Minimum Flow Rate (gpm)	Time of Minimum Flow Rate	Maximum Flow Rate (gpm)	Time of Maximum Flow Rate
4/16/2004 3:00:00 AM	350	150	3:30:00 AM	480	7:15:00 AM
4/17/2004 3:00:00 AM	360	170	3:30:00 AM	500	9:00:00 AM
4/18/2004 3:00:00 AM	360	170	2:30:00 AM	510	8:45:00 PM
4/19/2004 3:00:00 AM	350	160	3:30:00 AM	510	6:00:00 PM
4/20/2004 3:00:00 AM	360	160	3:45:00 AM	510	8:00:00 PM
4/21/2004 3:00:00 AM	370	160	3:00:00 AM	500	9:00:00 PM
4/22/2004 3:00:00 AM	360	170	3:00:00 AM	500	8:15:00 PM
4/23/2004 3:00:00 AM	370	170	2:30:00 AM	480	7:30:00 PM
4/24/2004 3:00:00 AM	360	160	4:00:00 AM	500	9:15:00 AM
4/25/2004 3:00:00 AM	380	180	4:00:00 AM	490	10:15:00 AM
4/26/2004 3:00:00 AM	360	170	2:45:00 AM	510	8:00:00 PM
4/27/2004 3:00:00 AM	350	160	3:00:00 AM	490	6:45:00 PM
4/28/2004 3:00:00 AM	360	160	3:30:00 AM	490	9:15:00 PM
4/29/2004 3:00:00 AM	400	180	3:15:00 AM	640	12:15:00 AM
	Average Flow Rate (gpm)	Minimum Flow Rate (gpm)	Time of Minimum Flow Rate	Maximum Flow Rate (gpm)	Time of Maximum Flow Rate
	360	150	4/16/2004 3:30:00 AM	640	4/30/2004 12:15:00 AM
Total 7357556.6 gal					

Convert graphical data to tabular with one click. Statistical functions are summarized beneath each column. Flowlink scales tables to your printed page.

## Sampler Compatibility

Integrate data from Isco's 6700 Series, or Avalanche samplers, with flow meter data for comprehensive analysis and reporting.



Upper pane shows level, flow rate and rainfall. Lower pane shows events (blue triangles) for each sample, with stream water and sample temperatures. Conductivity, pH, dissolved oxygen, etc., can also be displayed.

## Flowlink 5 Computer Requirements

Operating System	Microsoft Windows 98, NT, 2000, and XP	Disk Drive	CD ROM
Microprocessor	133 MHz Pentium® or equivalent	Monitor	SVGA, 800 x 600 resolution
RAM	32 Mbytes <sup>[1]</sup> (recommended)	Printer	Color (recommended)
Hard Drive	100 Mbytes free space available for program data <sup>[2]</sup> (recommended)	Communication	Serial or USB <sup>[3]</sup> port with Isco Interrogator Cable, Hayes™ compatible telephone modem

[1] System must meet the minimum hardware requirements for the selected operating system.

[2] Estimate based on a database with 15 sites, each having 3 data sets (e.g., level, velocity, and flow rate), each set having a 15-minute reading interval, with the database archived every 6 months.

[3] Requires customer-supplied USB to RS-232 adapter/converter cable.

NOTE: A Flowlink 3 database can be opened in Flowlink 5 after conversion, using Isco's Site Converter software (included with Flowlink 5).



### Teledyne Isco, Inc.

4700 Superior Street  
Lincoln, NE 68504 USA  
Phone: (402) 464-0231  
USA & Canada: (800) 228-4373  
FAX: (402) 465-3022  
e-Mail: [info@isco.com](mailto:info@isco.com)  
Internet: [www.isco.com](http://www.isco.com)

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## Isco Flowlink® Pro Software

Flowlink Pro is a server/client package for municipalities and service providers who manage multi-site wastewater flow monitoring networks.

In addition to providing the advanced analytical and site management tools of Isco's Flowlink 5 Software, Flowlink Pro meets large-enterprise needs for information delivery, database connectivity, and web-based data access.

### ► Data push

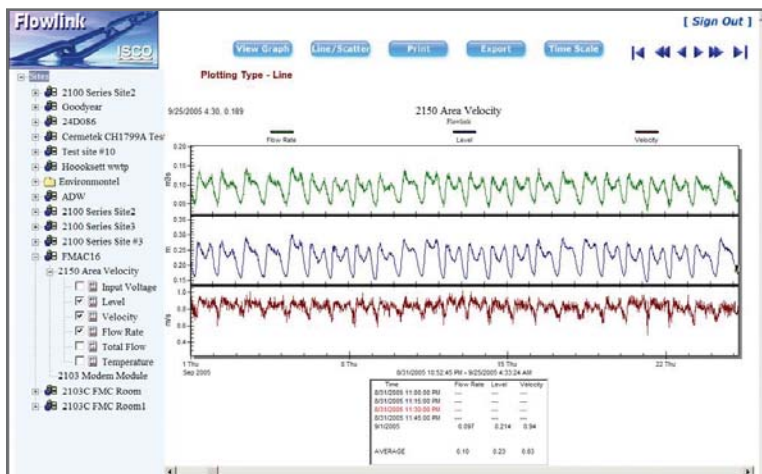
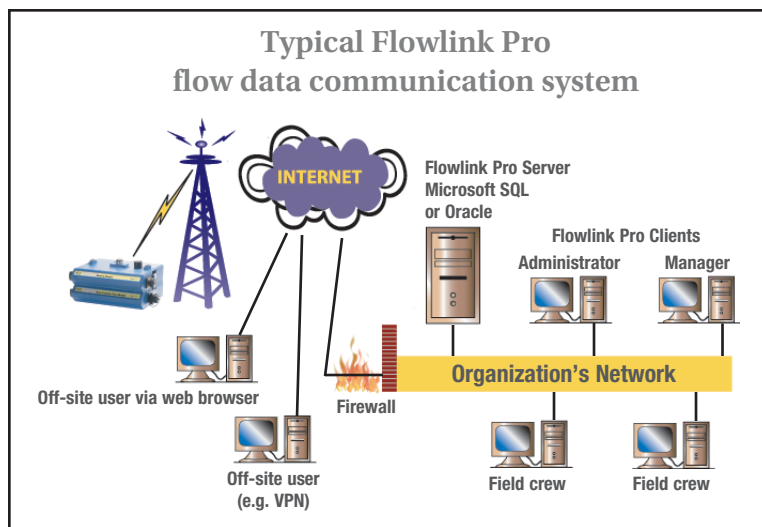
Instruments deployed at each monitoring site can push packet-switched data to the server at any time via 1xRTT protocol. Data transmission speeds of up to 144 Kbps dramatically reduce communication costs compared to site-by-site dial-up interrogation.

### ► Database connectivity

Flowlink Pro offers straightforward, seamless data exchange with centralized Oracle® and Microsoft® SQL databases. Database size is limited only by the server storage capacity, and concurrent access by multiple users is supported.

### ► Web access

Flow data are available via the web for flexible multi-user access. Web access can be configured on either a local or third-party hosted server to meet user requirements.



*Browser-based access makes it easy to view your data from anywhere.*

Call today, or visit [www.isco.com/flowlink](http://www.isco.com/flowlink) for more information.



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4700 Superior Street  
Lincoln, NE 68504 USA  
Phone: (402) 464-0231  
USA & Canada: (800) 228-4373  
FAX: (402) 465-3022  
e-Mail: [iscoinfo@teledyne.com](mailto:iscoinfo@teledyne.com)  
Internet: [www.isco.com](http://www.isco.com)

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## What's New in Flowlink® 5?

*More power* for your flow monitoring program. Nearly every improvement began as a request from a Flowlink 4 user like you.

- Faster, more versatile data retrieval
- New data analysis tools including reference and best fit curves
- More time-saving ways to view and report flow data
- Powerful editing capabilities make it easy to correct data adversely affected by external noise, site conditions, etc.

## New Data Collection Features

Recent Measurement Screen			
Site Name	Module Name	Parameter	Value
Forest Woods	2150 Area Velocity	Level	0.065
Forest Woods	2150 Area Velocity	Input Voltage	10.523
Forest Woods	2150 Area Velocity	Velocity	1.445
Cleaver	2150 Area Velocity	Level	0.362
Cleaver	2150 Area Velocity	Input Voltage	10.106
Cleaver	2150 Area Velocity	Velocity	0.711
Superior Street	Top	Level	0.349
Superior Street	Top	Input Voltage	8.317

### Recent Measurement Screen

Flowlink 5 adds a Recent Measurement Screen which lets you view the most recently retrieved measurements from all sites of interest in a single window. This screen allows you to conveniently spot-check selected readings to see if the site conditions are yielding expected data. Abnormal values flag the sites that need attention.



### Disconnect Hot Key

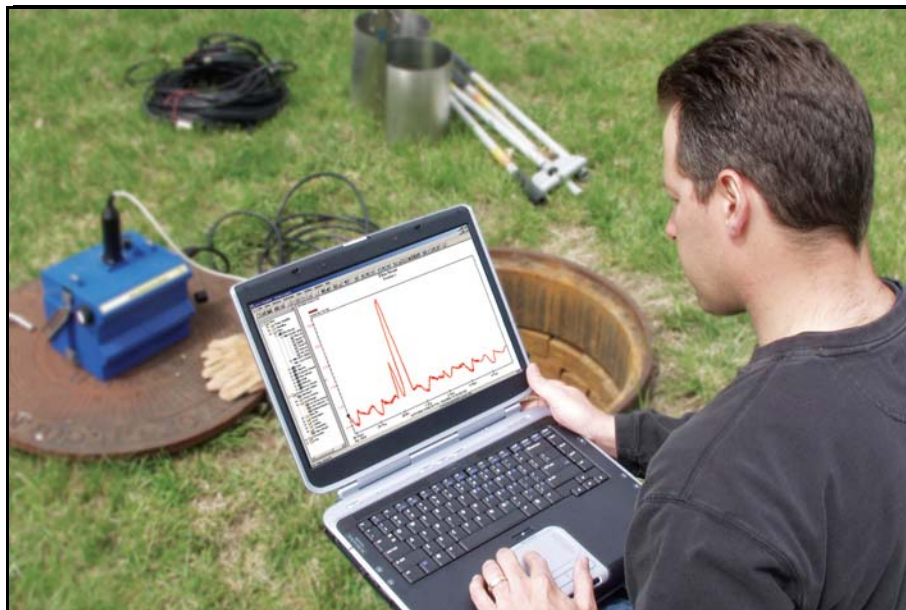
The F2 keyboard button is now a hot key that disconnects Flowlink from the instrument. Hot keys (F11 Quick Connect; F7 Connect; F8 Retrieve Data; F3, Quick Graph; F2 Disconnect) simplify your work on site, eliminating the need to navigate menus. Hot keys are especially helpful when lighting conditions are poor.

Measurement	Primary
RIGHT SENSOR::Time	---
RIGHT SENSOR::Input Voltage	24 hr
RIGHT SENSOR::Level	15 min
RIGHT SENSOR::Velocity	15 min
RIGHT SENSOR::Flow Rate	15 min
RIGHT SENSOR::Total Flow	24 hr

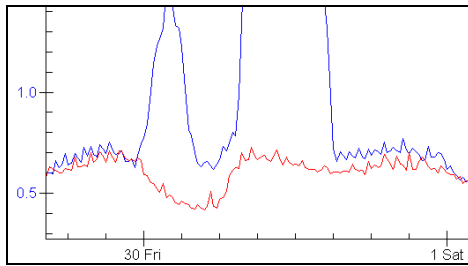
Calculated Flow      Measurement Details

### Faster Data Retrieval

Save time when retrieving data from 2100 Series sites by turning off the flow rate data storage rate. Flowlink 5 can perform off-line flow calculations—using your computer to convert 2100 Series level or level and velocity data to a flow rate—and store this as a data set. Whenever you retrieve new data, Flowlink 5 automatically updates the off-line flow data set.

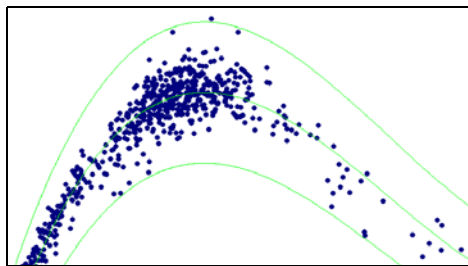


# New Data Analysis Features



## Reference Curves

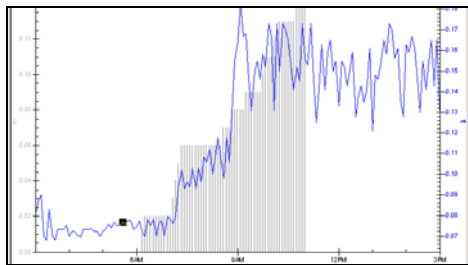
Reference curves allow you to create a “standard” or “baseline” data set for comparison with other data sets of the same measurement type. For example, a reference curve made from flow rate data representing dry weather flow can be a useful I&I or CSO study tool. This reference curve can then be compared to flow rates during wet weather. You can subtract this normal, dry weather flow from the wet weather flow using a series formula to report the difference.



## Best Fit Curves

Determine if your data fits an expected model (goodness of fit). Best Fit Curves superimpose a third-degree polynomial or a Manning formula curve over your scatter plot data. Best Fit Curves include user-specified upper and lower limits.

Scatter plots and Best Fit Curves not only let you validate your data, they can give you insight into the performance of the flow channel.



## Accumulate Data

A new “Accumulate Without Reset” statistical function adds the values of each reading across the displayed time span. Also, the “Accumulate With Reset” statistical function adds the value of each reading, but resets to zero at each summary interval.

Use this feature to accumulate readings throughout an event. For example, a rainfall graph would rise for each  $\frac{1}{100}$  inch (or 0.01 cm) to give a clear visual of cumulative rainfall.

## Series Formulas

Added series formula operators make your equations more flexible and powerful.

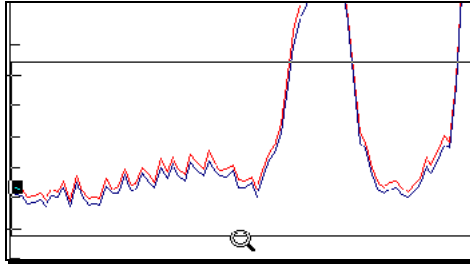
- Absolute Values, e.g.  $|X|$
- Binary minus symbol, e.g.  $(-X)$
- Unary Negation Operator, e.g.  $-(1A + 1B)$

## Calculated Flow

Flowlink 5 improves calculated flows. Unlike the flow conversion series operation in Flowlink 4, calculated flows are ready for statistical functions and series formulas.

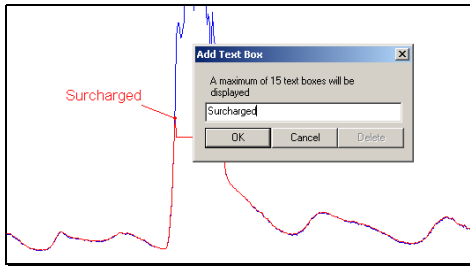


# New Data Presentation and Reports



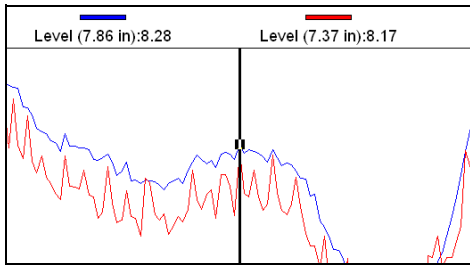
## Vertical Zoom

Get a closer look at Yaxis values by zooming vertically. Now you can see hidden details with click-and-drag ease.



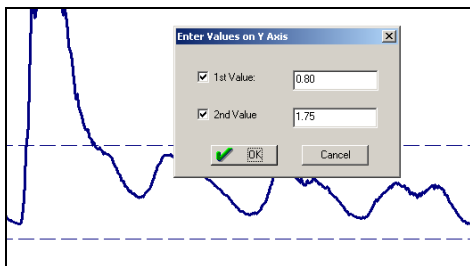
## Text Boxes

Label key events or anomalies with text boxes. Flowlink 5 saves these text boxes with the graph so that you can view your annotations on-screen, in print, and in exported PDF and HTML formats.



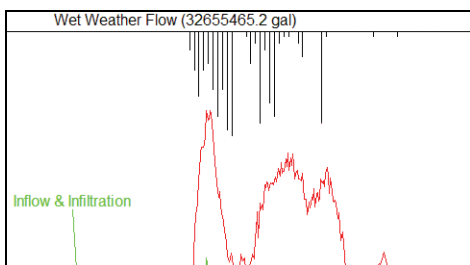
## Vertical Line

Use the vertical line feature on a graph to quickly compare the values of all data points with the same time stamp. The legend of the graph reports the value of each data point on the vertical line. To see other time stamps, simply move the vertical line along the X-axis using the arrow keys or the mouse.



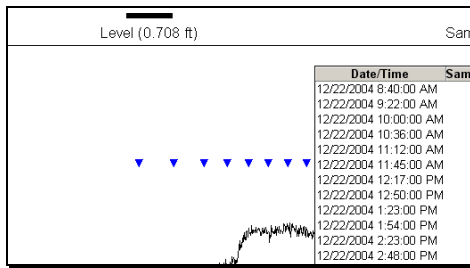
## Horizontal Lines

Annotate normal ranges, limits, etc. with horizontal lines. Flowlink 5 can display two horizontal lines at user-specified values on a graph.



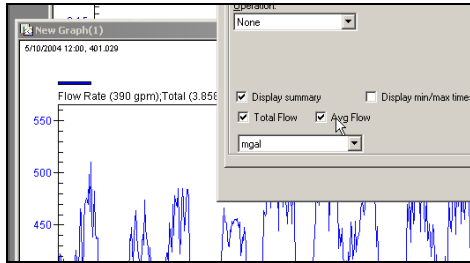
## Invert data

Invert the display of selected data for easy comparison or reference, and to make better use of the plot area when a pane displays more than one series of data. For example, display rainfall at the top of the pane vs. flow rate at the bottom as shown at left.



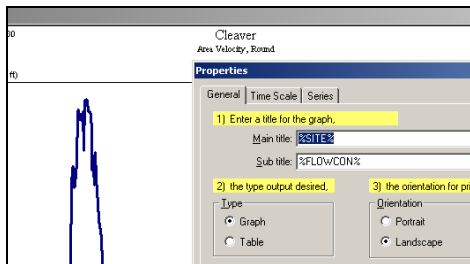
## Sample Events

Flowlink 5 improves sample event reporting. With Flowlink 4, you could only display sample events with at least one other data set, often requiring unneeded data in a sample event report. Flowlink 5 now manages sample events as a separate data set, so you can display sample event data alone in graphs and tables.



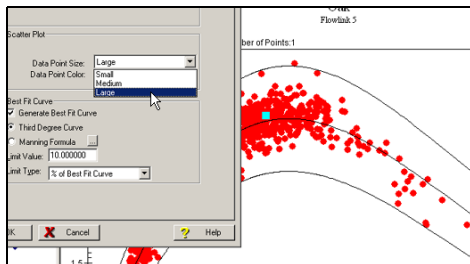
## Average Flow Rate

Flowlink 5 provides an option to report Average Flow Rate in addition to the Total Flow displayed on the graph legend.



## Title Macros Added

Build more automation into your graph and table templates. Flowlink 5 adds macros to let you report additional information in titles and subtitles. The FLOWCON macro displays the flow conversion method. The FLOWCONDETAILS macro displays the parameters of the flow conversion method.



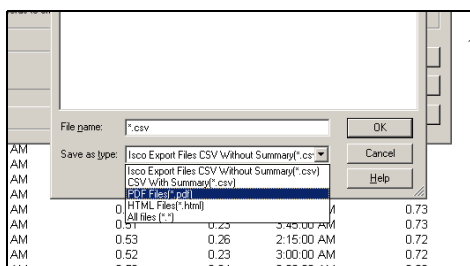
## Scatter Plot Data Points

Flowlink 5 lets you customize the size and color of the data points in your scatter plot.

Date/Time	Left Sensor (in)	Rt Sensor (in)	Left Velocity (ft/s)	Rt Velocity (ft/s)
Hourly Average				
05 8:00:00 AM	Average 6.88	Average 6.88	Average 0.73	Average 0.73
05 9:00:00 AM	6.87	6.87	0.72	0.72
05 10:00:00 AM	6.97	6.97	0.78	0.78
05 11:00:00 AM	6.92	6.92	0.72	0.72
05 12:00:00 PM	6.95	6.95	0.78	0.78
05 1:00:00 PM	7.04	7.03	0.74	0.74
05 2:00:00 PM	7.03	7.03	0.77	0.77
05 3:00:00 PM	7.09	7.09	0.84	0.84
05 4:00:00 PM	7.13	7.13	0.79	0.79

## Table Column Formatting

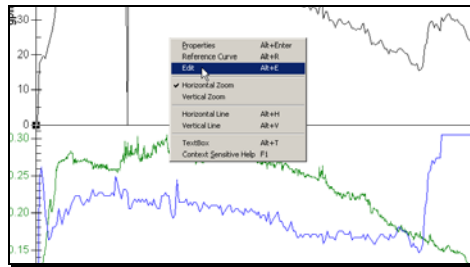
Flowlink 5 improves table column formatting, including an option to automatically scale the column width and font size to fit the printed page.



## Export Formats Added

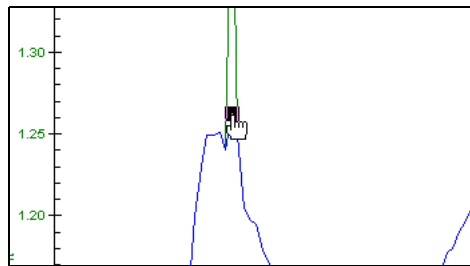
Share your graphs and tables with others. Flowlink 5 adds PDF and HTML export formats for graphs and tables.

# New Data Editing Features



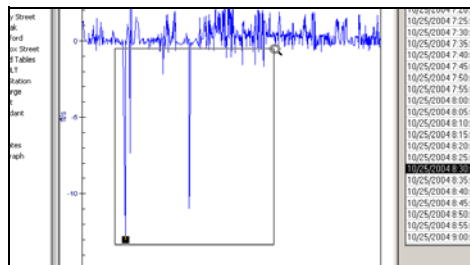
## Edit Mode from Graph/table Display

Flowlink 5 allows you to quickly correct data by jumping into the edit mode from a graph or table window. The Editor window now supports multiple panes and series of data.



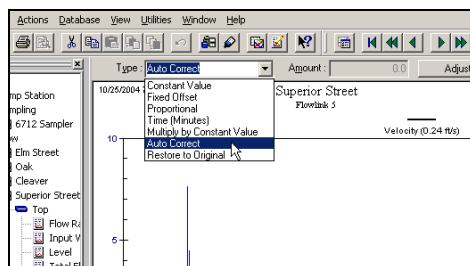
## Click and Drag Editing

Could editing single data points be any easier? Click and drag a single data point to any new value.



## Block Editing

Click and drag across the graph to select a block of data for editing. A block can be a range of contiguous points, or multiple ranges from dragging the cursor across only the lowest or highest points that appear throughout the time span. Then, apply any of the editing tools to the selected data. When combined with the Auto Correct editing tool, block editing is the fastest way to clean up spikes or drop-outs caused by poor site conditions.

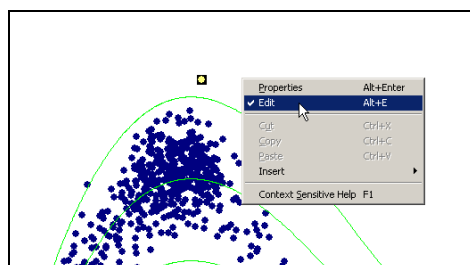


## Editing Tools Added

**Auto Correct.** With one click, data points selected for editing are adjusted to fit linearly between the data points immediately before and after the selected range.

**Multiply by Constant Value.** In Flowlink 5 you can now edit data by multiplying the original values by a constant.

**Restore to Original.** Restore to Original allows you to selectively remove edited values from the site data.



## Scatter Plot Editing

If you find outlying data points in a scatter plot—deal with them. Jump into the edit mode and drag single data points vertically or horizontally into place. Use the new block editing feature to move a group of points. Or, to edit many points at once, use the Best Fit Curves feature to move all outlying points to the curve or its limits.

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## More User-requested Features

### Units of Measure Added to Series Formulas

We heard from a number of Flowlink 4 users who wanted to apply different units of measure to series formula results. Flowlink 5 now allows a wide variety of measurement units, no longer restricting your choices to units that apply only to the original data type.

### Archiving Off-line Flow Calculations

In Flowlink 4, off-line flow calculations were generated as needed for graphs and tables, but not stored with the site data. Flowlink 5 now stores off-line conversions from the Calculate Flow feature as a data set that you can archive with the rest of the site data.

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## Instrument Compatibility

As of August 2005, Flowlink 4 and Flowlink 5 support the following Isco products:



- 2100 Series Modules
- 4100 Series Flow Loggers
- 4200 Series Flow Meters
  - YSI 600 Sondes connected to flow meter
- 6700 Series Samplers
  - 700 Series Flow Modules connected to sampler
  - SDI-12 Devices connected to sampler
  - YSI 600 Sondes connected to sampler
- 675, 676 Logging Rain Gauge
- 581 Rapid Transfer Device

To provide the best products that technology will allow, Teledyne Isco reserves the right to improve existing products and introduce new products. These improved and new products may not be supported by Flowlink 4.

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## Flowlink 5 Ordering Information

For a limited time, special prices are available for licensed Flowlink 4 users. Place your order using the part numbers below to receive the discount.

### Flowlink 5

English .....	68-2540-205
French .....	68-2540-215
German .....	68-2540-225
Spanish .....	68-2540-235
Italian .....	68-2540-245
Swedish .....	68-2540-255

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## Computer Requirements

Operating System: Microsoft® Windows® 98, NT, 2000, and XP	Disk Drive: CD ROM
Microprocessor: 133 MHz Pentium® or equivalent	Monitor: SVGA, 800 × 600 resolution
RAM: 32 Mbytes <sup>[1]</sup> (recommended)	Printer: Color (recommended)
Hard Drive: 100 Mbytes free space available for program data <sup>[2]</sup> (recommended)	Communication: Serial or USB <sup>[3]</sup> port with Isco Interrogator Cable, Hayes™ compatible telephone modem

1. System must meet the minimum hardware requirements for the selected operating system.
2. Estimate based on a database with 15 sites, each having 3 data sets (*e.g.*, level, velocity, and flow rate), each set having a 15-minute reading interval, with the database archived every 6 months.
3. Requires customer-supplied USB to RS-232 adapter/converter cable.

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## Need More Information?



### Preview CD Available

The preview CD provides a video overview of Flowlink 5. Contact Teledyne Isco or your representative to receive this free CD.

### Lease and Demo Versions Available

Want to try before you buy? Request a free, fully functional 45-day demonstration version. For longer-term evaluation, ask about our lease programs.



Water is life. Protect it.

#### Teledyne Isco, Inc.

4700 Superior Street  
Lincoln, NE 68504 USA  
Phone: (402) 464-0231  
USA & Canada: (800) 228-4373  
FAX: (402) 465-3022  
e-Mail: [IscoInfo@teledyne.com](mailto:IscoInfo@teledyne.com)  
Internet: [www.isco.com](http://www.isco.com)