

# ***FloBoss™ 107/107E Flow Manager Overview***

New Technology...  
New Features and Benefits.

Remote Automation Solutions



# Introducing the FloBoss 107...

- The FloBoss™ 107 Flow Manager introduces a new technology platform to the FloBoss family of flow computers.
- It raises the bar for modularity, versatility, performance, and ease of use.



# And the FloBoss 107E

- The FloBoss 107E is the environmentally-packaged version of the FloBoss 107.
- It houses the main unit and can also house batteries, data radio, integral sensor, and LCD touchpad.
- Sensor options include dual-variable for differential/static pressures and a single or dual pressure sensor for point monitoring.
- The enclosure can be panel or pipestand mounted and meets CSA type 4 rating.



# FloBoss 107E (cont'd)

- This interior view of the FloBoss 107E shows the FloBoss 107 main unit and four 12 Volt, 28 Amp-Hr batteries.
- The space to the left of the FloBoss 407 can be used for a data radio.



# Available Offshore Enclosure

- A polycarbonate enclosure is also available to meet the needs of harsh off-shore environments.
- It houses the FloBoss 107 main unit and LCD touchpad.
- The enclosure meets CSA type 4X rating, corrosion resistant.
- Sensor options include dual-variable for differential/static pressures and a single or dual pressure sensor for point monitoring.



# Applications Overview

- The FloBoss 107 is the ideal measurement solution for many natural gas applications. These include, but are not limited to:
  - Custody Transfer
  - Wellhead Measurement and Control
  - Well Injection Pressure
  - Compressor Fuel Gas
  - Industrial Gas Usage
  - Commercial Gas Usage

# Functional Overview

- The FloBoss 107 provides these outstanding functional features:
  - Supports differential pressure elements and pulse meter applications for 1 to 4 meter runs.
  - Expandable I/O – Six points on the optional CPU assembly and up to six I/O modules.
  - Configurable operating speed to optimize low power consumption.
  - Standard and Extended History archiving.
  - Field-side surge and short-circuit protection.
  - Local storage of monitored, measured, and calculated data.

# Functional Overview (Cont'd)

- The FloBoss 107 provides these outstanding functional features (cont'd):
  - Local control of field equipment, including valves and motors.
  - Local and remote communication capabilities.
  - High levels of data security.
  - Memory back-up by battery and super-capacitor to provide long term data, configuration, and operational integrity when not in service.



# Measurement Overview

- The FloBoss 107 is capable of calculating flow for up to 4 meter runs through a variety of metering devices including an orifice plate, turbine meter, or other pulse-generating device.
- Meter inputs may utilize analog transmitters. For multiple run applications (up to four), you can add an optional Multi-Variable Sensor (MVS) module to provide an interface to remote MVS transmitters.

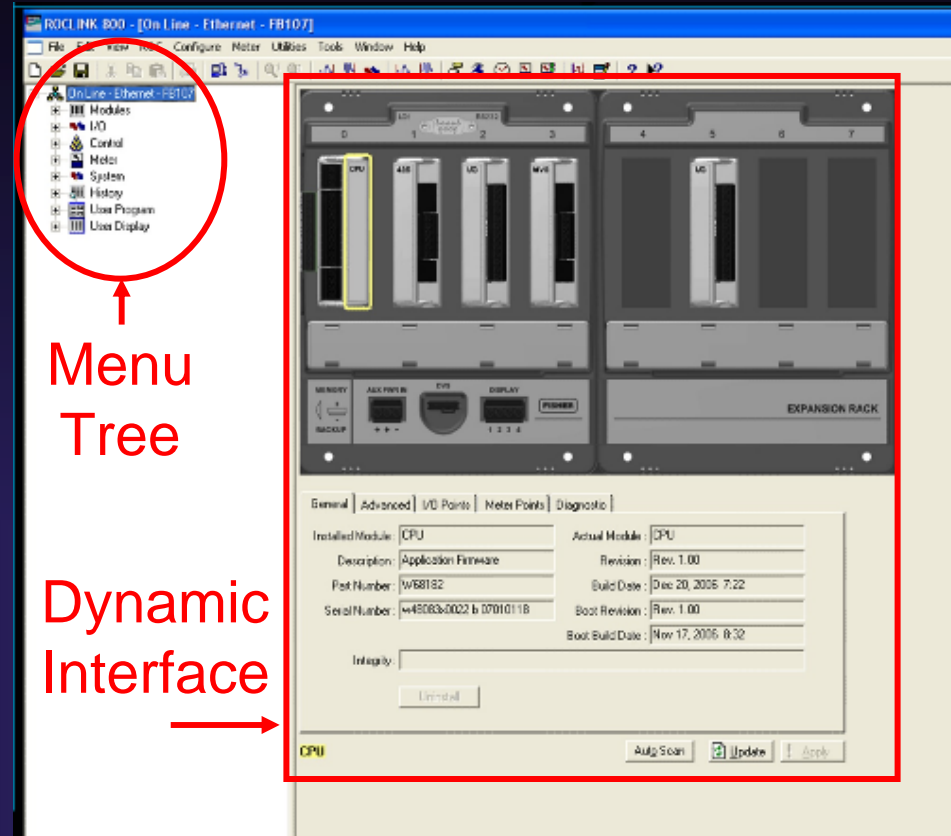
# ROCLINK 800 Overview

- *ROCLINK 800* is the easy-to-use software for configuration and downloading data.
- Supports most FloBoss and ROC products for convenience in mixed-product installations.
- On-line Help screens get first-time users up and running quickly.



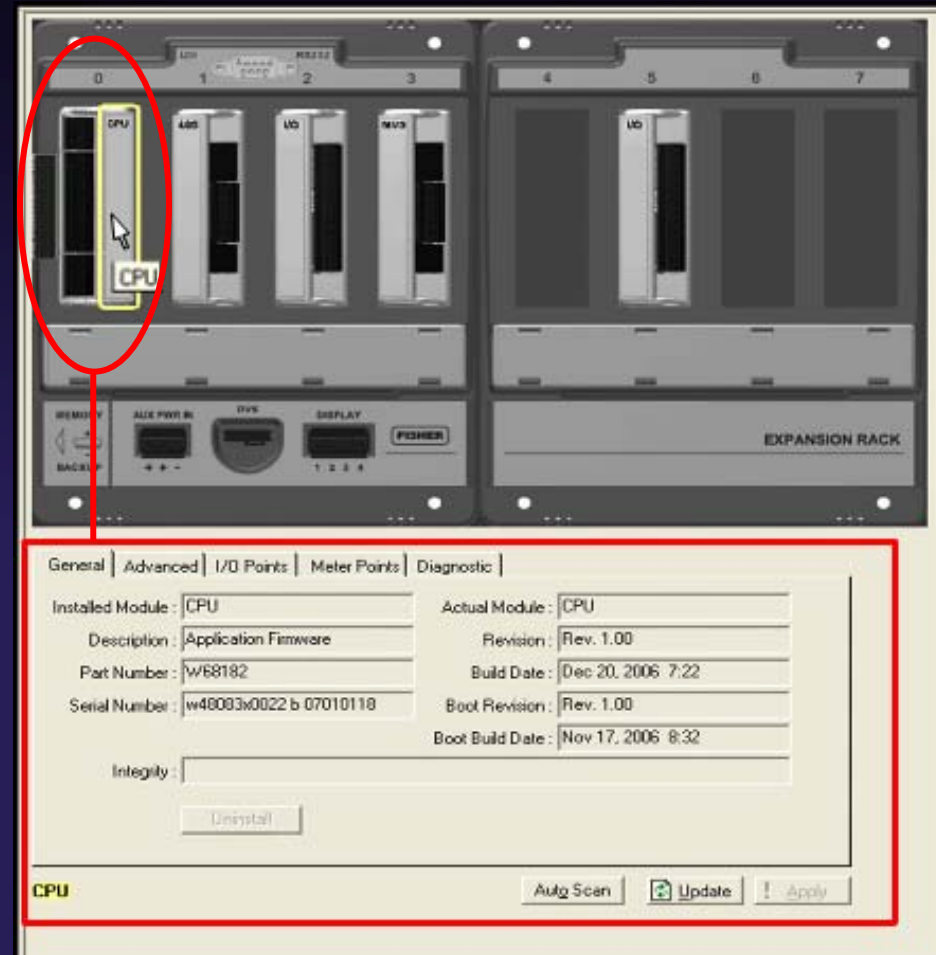
# ROCLINK 800 Overview (cont'd)

- You can use the familiar menu tree to navigate ROCLINK 800.
- Or use the new dynamic interface that gives you a graphical view of the FloBoss 107.



# ROCLINK 800 Dynamic Interface

- The new dynamic interface makes it easier than ever to configure the FloBoss 107.
- The dynamic interface lets you point at, and click on, modules to configure or troubleshoot them.
- An inexperienced user can see at a glance if all is well, or if help needs to be summoned.



# ROCLINK 800 Dynamic Interface (cont'd)

- You can quickly see an integrity problem with a module, or alarm status of a point, when a red “I” or a yellow “A” indicator appears next to the module.
- Clicking on either indicator brings up additional information to help you investigate the problem.

The screenshot displays the ROCLINK 800 Dynamic Interface. The top portion shows a hardware rack with modules in slots 0-7. Slot 1 contains a CPU (485), Slot 2 contains an I/O module, and Slot 5 contains an I/O module. A yellow circle highlights a yellow 'A' alarm indicator next to Slot 1, labeled 'Meter-1 Alarm'. A red circle highlights a red 'I' integrity indicator next to Slot 5, labeled 'AI-2 Out of Range'. The bottom portion shows a software interface with tabs for 'General', 'I/O Setup', and 'I/O Points'. The 'ACTIVE ALARMS' tab is selected, showing a table of points with their integrity status.

POINT	TAG	CONFIGURATION	INTEGRITY	ACTIVE ALARMS
AI-1	AI 1 Slot5	...		
AI-2	AI 2 Slot5	...	Out of Range	
AO-1	AO 1 Slot5	...		
DO-2	DO 2 Slot5	...		
PI-1	PI 1 Slot5	...		
PI-2	PI 2 Slot5	...		

SLOT 5 - Auxiliary 6-Point IO

Auto Scan Update Apply

# Main Unit

- The FloBoss 107 consists of a main unit with 4 module slots.
- Slots 1 and 2 can contain communication modules.
- Slots 1, 2, and 3 can contain input/output (I/O), multi-variable sensor (MVS), and application modules.



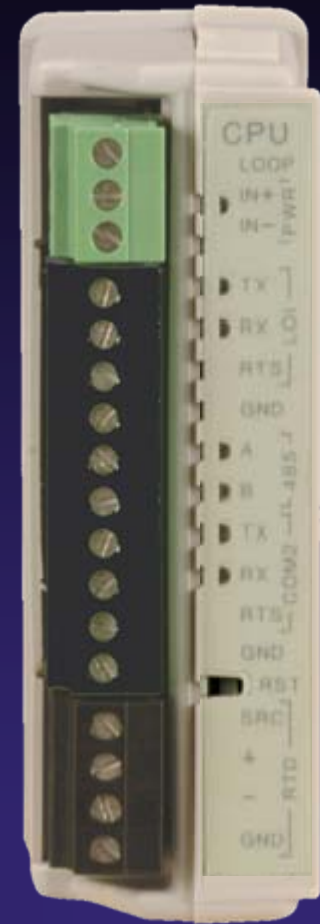
# Expansion Rack

- An optional expansion rack plugs into the main unit and provides 4 slots to house additional I/O modules.
- You can install I/O modules in slots 4 through 6 of the expansion rack.
- When a communication module is installed in slot 1 of the main unit, you can install an I/O module in slot 7 of the expansion rack.



# CPU Module

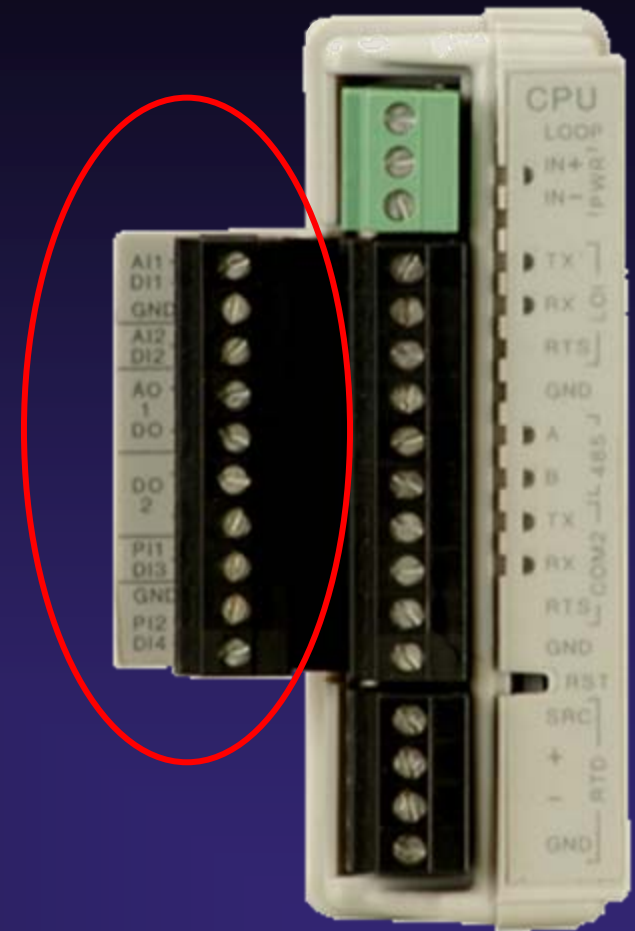
- Slot 0 is for the central processing unit (CPU) module which provides:
  - 3 communication ports
  - 1 four-wire resistance temperature detector (RTD) input
  - power input
  - loop power output.





# CPU Module with I/O Board

- Optionally, the CPU module can include a 6-point configurable I/O board that provides:
  - 2 analog or discrete inputs
  - 1 analog output or discrete input
  - 1 discrete output
  - 2 pulse inputs or discrete inputs.



# Communication Modules

- You can install an RS-232 or RS-485 communication module in slot 1 or 2 of the main unit.
- When a communication module is installed in slot 2, the COM2 port on the CPU is reconnected to that module.



# I/O Modules

- Both Configurable and Fixed I/O modules are available.
- Configurable I/O modules are entirely software configurable as to I/O type and reduce the number of unique modules needed for your application.
- No jumpers or dip switches are needed for configuration.
- Analog inputs use internal resistors for current loop devices.



# 6-Point Mixed I/O Module

- This I/O module is software configurable to meet the needs of many applications and can support:
  - 2 analog or discrete inputs
  - 1 analog output or discrete input
  - 1 discrete output
  - 2 pulse inputs or discrete inputs.
- Loop power is provided by the module eliminating the need for external power supplies.



# AI/DI Module

- This input module provides 8 single-ended analog or discrete inputs.
- Each of the 8 inputs can be software configured individually as an analog or discrete input.
- Analog inputs use internal resistors for current loop inputs.
- The module provides 24 Vdc loop power to external transmitters.



# Discrete Output Relay Module

- This module provides 6 dry discrete relay outputs.
- One output provides a form C relay (NO and NC) contact. The remaining 5 outputs provide NO relay contacts.
- Relay contacts are rated at 1 Amp at 30 Vdc.
- Outputs can be latched, toggled, momentary, or timed duration.



# 485 Applications Module

- This 485 Applications Module comes pre-loaded with application software to support equipment such as gas chromatographs or other intelligent devices.
- The module uses its own processor to provide plug and play convenience.
- Device-specific configuration screens for ROCLINK 800 are also provided by the module.



# MVS Modules

- The MVS module can interface with up to 6 MVS transmitters.
- You can install an MVS module in slots 1 to 3 of the main unit and in slots 4 to 7 of the expansion rack, regardless of the position of any other type of module.





# LCD Touchpad

- The LCD Touchpad lets you view and enter configuration and operation parameters.
- The touchpad is transreflective for high visibility in daylight and is backlit for night viewing.
- View single point real-time and historical trends in a line graph format.
- Troubleshoot and diagnose problems down to the individual point level.



# Flow and Properties Calculations

- Gas flow is calculated for both volume and energy in accordance with the 1992 AGA Report No. 3 and 1996 Report No. 7.
- ISO5167-2003 calculations are supported for gas flow.
- AGA 8 compressibility calculations use Detail, Gross I, or Gross II methods.
- Other flow and properties calculations are available to meet worldwide metrology and application requirements.

Meter Setup

Meter Number: 1 - Meter #1 Meter Tag: Meter #1

General Inputs Advanced Fluid Properties Sampler Calibration Factors Alarms

I/O Definition	Values
Differential Pressure: Manual	0.0 InH2O
Static Pressure: Manual	0.0 PSI
Temperature: Manual	0.0 Deg F

Type of Primary Element

- Orifice with Flange Taps
- Orifice with Corner Taps
- Orifice with D and D/2 Taps
- Venturi Tube

Pipe Diameter: 8.071 Inches

Orifice Diameter: 4.0 Inches

Low Flow CutOff: 1.0 InH2O

Stacked DP

- Disabled
- Enabled

Low DP Input: Manual

Low DP SetPoint: 0.0 InH2O

High DP SetPoint: 0.0 InH2O

Copy Paste Update OK Cancel Apply

# Historical Databases

- The FloBoss 107 maintains API Chapter 21.1 compliant historical archives for measured and calculated values, and events/alarms.
- Up to 100 standard history points can be archived on an hourly basis for 35 days and daily values for 35 or 60 days.
- An extended history database of up to 25 points supports data logging at intervals from 1 second to 60 minutes for advanced applications.

ROCLINK 800 - [Periodic History: A1G2 - FB107]

Periodic History: A1G2 - FB107  
Uploaded: 04/12/2007 08:06:05 Operator: LOI

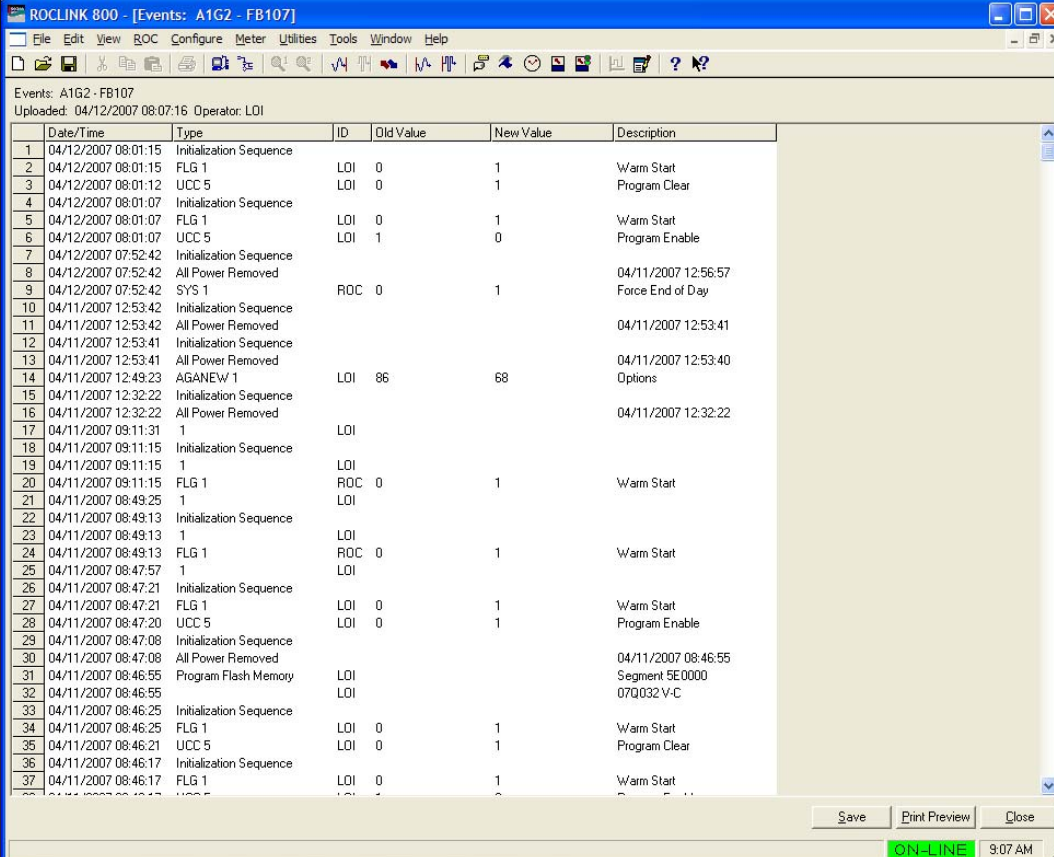
	Date/Time	Meter #1 MINTDY TOTAL	Meter #1 CUR DP AVG	Meter #1 CUR SP AVG	Meter #1 CUR TP AVG	Meter #1 IMV/BMV AVG	Meter #1 HWPF AVG	Meter #1 FLOWDY ACCUM/Day	Meter #1 ENGDY ACCUM/Day
1	04/12/2007 08:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	04/12/2007 07:52:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	04/11/2007 12:49:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	04/11/2007 12:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	04/11/2007 11:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	04/11/2007 10:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	04/11/2007 09:11:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	04/11/2007 09:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	04/11/2007 08:49:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	04/11/2007 08:48:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	04/11/2007 08:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	04/11/2007 07:52:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	04/10/2007 11:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	04/10/2007 10:09:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	04/10/2007 10:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	04/10/2007 09:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	04/10/2007 08:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	04/10/2007 07:34:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	04/09/2007 12:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	04/09/2007 11:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	04/09/2007 10:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	04/09/2007 09:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	04/09/2007 08:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	04/09/2007 07:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
25	04/09/2007 06:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	04/09/2007 05:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	04/09/2007 04:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
28	04/09/2007 03:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29	04/09/2007 02:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	04/09/2007 01:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	04/09/2007 00:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	04/08/2007 23:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
33	04/08/2007 22:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	04/08/2007 21:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	04/08/2007 20:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	04/08/2007 19:00:00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Plot Select New Save Print Preview Close

ON-LINE 9:06 AM

# Event and Alarm Logs

- The Event Log records the last 240 parameter changes and power on/off cycles.
- The Alarm Log records the last 240 occurrences of alarms (set or clear).
- The logs can be viewed, saved to a disk file, or printed using *ROCLINK 800* software.

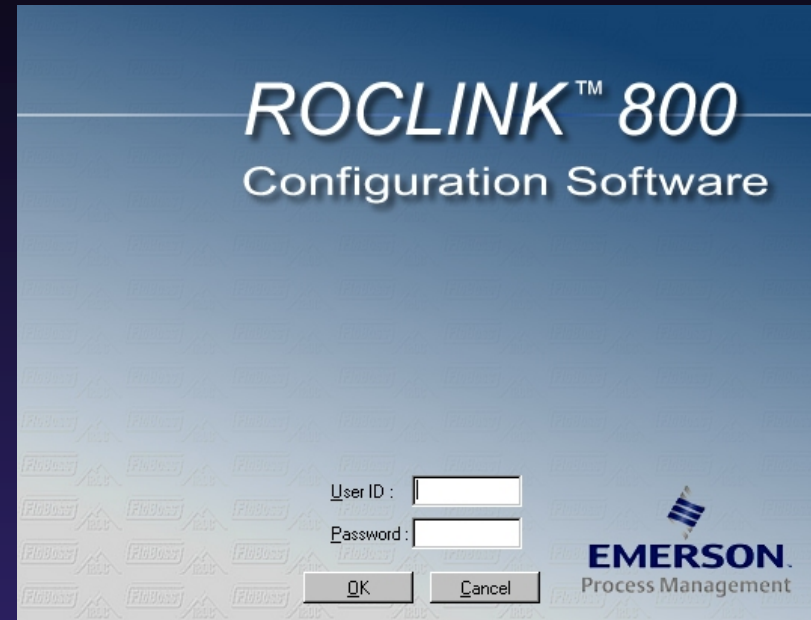


The screenshot shows the ROCLINK 800 software interface with a table of event logs. The table has columns for Date/Time, Type, ID, Old Value, New Value, and Description. The data is as follows:

	Date/Time	Type	ID	Old Value	New Value	Description
1	04/12/2007 08:01:15	Initialization Sequence				
2	04/12/2007 08:01:15	FLG 1	LOI	0	1	Warm Start
3	04/12/2007 08:01:12	UCC 5	LOI	0	1	Program Clear
4	04/12/2007 08:01:07	Initialization Sequence				
5	04/12/2007 08:01:07	FLG 1	LOI	0	1	Warm Start
6	04/12/2007 08:01:07	UCC 5	LOI	1	0	Program Enable
7	04/12/2007 07:52:42	Initialization Sequence				
8	04/12/2007 07:52:42	All Power Removed				04/11/2007 12:56:57
9	04/12/2007 07:52:42	SYS 1	ROC	0	1	Force End of Day
10	04/11/2007 12:53:42	Initialization Sequence				
11	04/11/2007 12:53:42	All Power Removed				04/11/2007 12:53:41
12	04/11/2007 12:53:41	Initialization Sequence				
13	04/11/2007 12:53:41	All Power Removed				04/11/2007 12:53:40
14	04/11/2007 12:49:23	AGANEW/1	LOI	86	68	Options
15	04/11/2007 12:32:22	Initialization Sequence				
16	04/11/2007 12:32:22	All Power Removed				04/11/2007 12:32:22
17	04/11/2007 09:11:31	1	LOI			
18	04/11/2007 09:11:15	Initialization Sequence				
19	04/11/2007 09:11:15	1	LOI			
20	04/11/2007 09:11:15	FLG 1	ROC	0	1	Warm Start
21	04/11/2007 08:49:25	1	LOI			
22	04/11/2007 08:49:13	Initialization Sequence				
23	04/11/2007 08:49:13	1	LOI			
24	04/11/2007 08:49:13	FLG 1	ROC	0	1	Warm Start
25	04/11/2007 08:47:57	1	LOI			
26	04/11/2007 08:47:21	Initialization Sequence				
27	04/11/2007 08:47:21	FLG 1	LOI	0	1	Warm Start
28	04/11/2007 08:47:20	UCC 5	LOI	0	1	Program Enable
29	04/11/2007 08:47:08	Initialization Sequence				
30	04/11/2007 08:47:08	All Power Removed				04/11/2007 08:46:55
31	04/11/2007 08:46:55	Program Flash Memory	LOI			Segment 5E0000
32	04/11/2007 08:46:55	1	LOI			07Q032 V-C
33	04/11/2007 08:46:25	Initialization Sequence				
34	04/11/2007 08:46:25	FLG 1	LOI	0	1	Warm Start
35	04/11/2007 08:46:21	UCC 5	LOI	0	1	Program Clear
36	04/11/2007 08:46:17	Initialization Sequence				
37	04/11/2007 08:46:17	FLG 1	LOI	0	1	Warm Start

# Data Security

- User access is limited by log-on identifier IDs and passwords.
- The log-on ID entered into *ROCLINK 800* must match one of the stored IDs for the unit to communicate.
- Both the operator interface and host can have the same security. Security levels may be determined by user and access level.



# SRBX Communication

- Spontaneous Report-By-Exception (SRBX) communication allows the FloBoss 107 to automatically report any alarm to a host computer.
- SRBX can be performed over dial-up modem or serial line to a host that is set up for receiving field-initiated calls.

The screenshot shows the 'Comm Port' configuration window with the 'RBX' tab selected. The window title is 'Comm Port'. At the top, 'Comm Ports' is set to '1 - Local Port' and 'Tag' is 'Local Port'. The 'RBX' tab is active, showing the following settings:

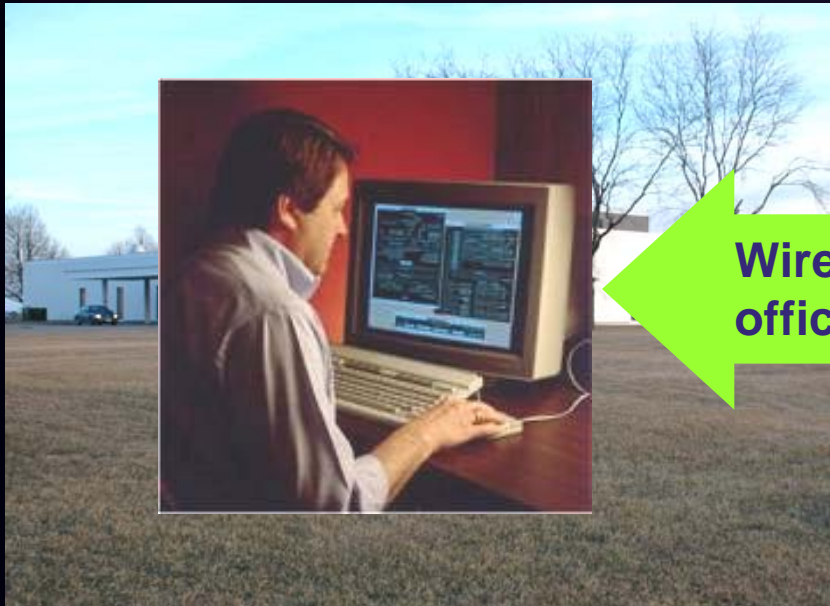
- RBX Mode:**  Enabled,  Disabled
- RBX Host:** Address: 1, Group: 0
- Delay:** Delay #1: 20.0 Seconds, Delay #2: 30.0 Seconds, Delay #3: 45.0 Seconds
- RBX Attempts #1:**  Fixed Number,  Continuous, value: 1
- RBX Attempts #2:**  Fixed Number,  Continuous, value: 2
- RBX Attempts #3:**  Fixed Number,  Continuous, value: 3
- Extra Key On Delay:**  Enabled,  Disabled, value: 0 Seconds
- RBX Alarm Index:** 0
- RBX Status:** Inactive

At the bottom, there are buttons for 'Copy', 'Paste', 'Update', 'OK', 'Cancel', and 'Apply'.

# Pass-Through Communications

- Pass-through gives the FloBoss 107 the capability to pass information between a host, and intelligent devices connected to the FloBoss 107 that use either ROC or Modbus protocol.
- Pass-through frees individual devices from communicating to the host thereby reducing communication costs when devices are geographically grouped.
- Pass-through is supported with RS485, RS232, or dial-up modem connections between the FloBoss 107 and each device.

# Pass-Through Communications (cont'd)



Wireless link from  
office to FloBoss



- The FloBoss 107 gathers data from intelligent devices and passes it on to the host computer.



# PID Loop Control

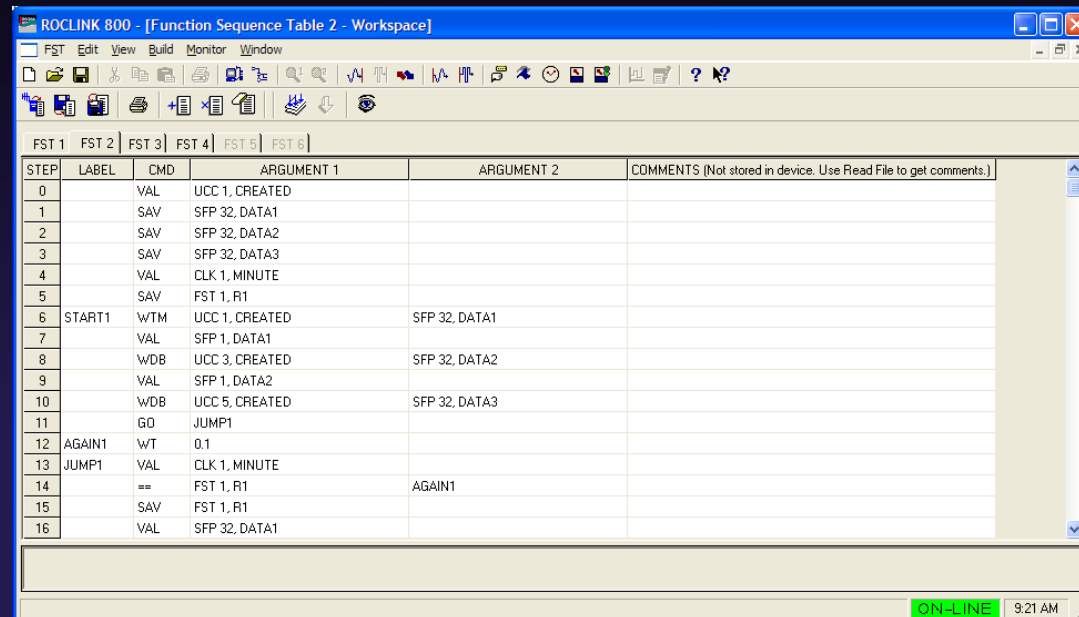
- PID (Proportional, Integral, and Derivative) closed-loop control provides operation of up to 8 feedback control loops that employs a regulating device, such as a control valve.
- The PID loop has its own user-defined input, output, and override capability.

The screenshot shows a 'PID Loop' configuration window with the following details:

- Title Bar:** PID Loop
- Fields:** PID: 1 - PID #1, Tag: PID #1
- Tabs:** General, Inputs/Outputs, Advanced
- General Tab:**
  - Scanning:**  Enabled,  Disabled
  - Mode:**  Manual,  Auto
  - Output Type:**  Analog,  Discrete
  - Control Type:**  Primary Only,  Override Control,  Override Only
- Override Section:**
  - Setpoint:** Primary: 0.0, Override: 0.0
  - Process Variable:** Primary: 0.0, Override: 0.0
  - Output Change:** Primary: 0.0, Override: 0.0
  - Output:** 0.0
  - Override Type Select:**  High,  Low
  - Loop Selected:** Disabled
- Tuning Section:**
  - Gain:** Primary: 0.5, Override: 0.5
  - Reset:** Primary: 4.0, Override: 4.0
  - Rate:** Primary: 0.0, Override: 0.0
  - Scale Factor:** Primary: -1.0, Override: -1.0
- Buttons:** Copy, Paste, Auto Scan, Update, OK, Cancel, Apply

# Logic and Sequencing Control

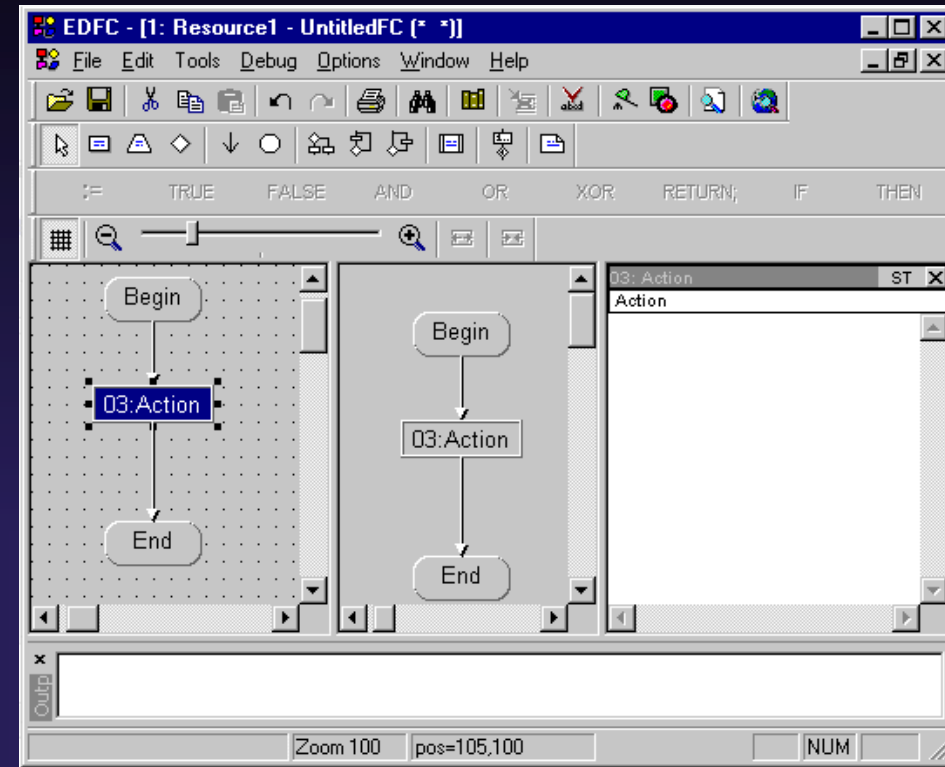
- Analog and discrete sequencing control is implemented through a Function Sequence Table (FST).
- The FST defines the actions to be performed by the FloBoss 107 through a series of Functions.
- The FST is developed using *ROCLINK 800* software.



STEP	LABEL	CMD	ARGUMENT 1	ARGUMENT 2	COMMENTS (Not stored in device. Use Read File to get comments.)
0		VAL	UCC 1, CREATED		
1		SAV	SFP 32, DATA1		
2		SAV	SFP 32, DATA2		
3		SAV	SFP 32, DATA3		
4		VAL	CLK 1, MINUTE		
5		SAV	FST 1, R1		
6	START1	WTM	UCC 1, CREATED	SFP 32, DATA1	
7		VAL	SFP 1, DATA1		
8		WDB	UCC 3, CREATED	SFP 32, DATA2	
9		VAL	SFP 1, DATA2		
10		WDB	UCC 5, CREATED	SFP 32, DATA3	
11		GO	JUMP1		
12	AGAIN1	WT	0.1		
13	JUMP1	VAL	CLK 1, MINUTE		
14		==	FST 1, R1	AGAIN1	
15		SAV	FST 1, R1		
16		VAL	SFP 32, DATA1		

# Programmable with DS800

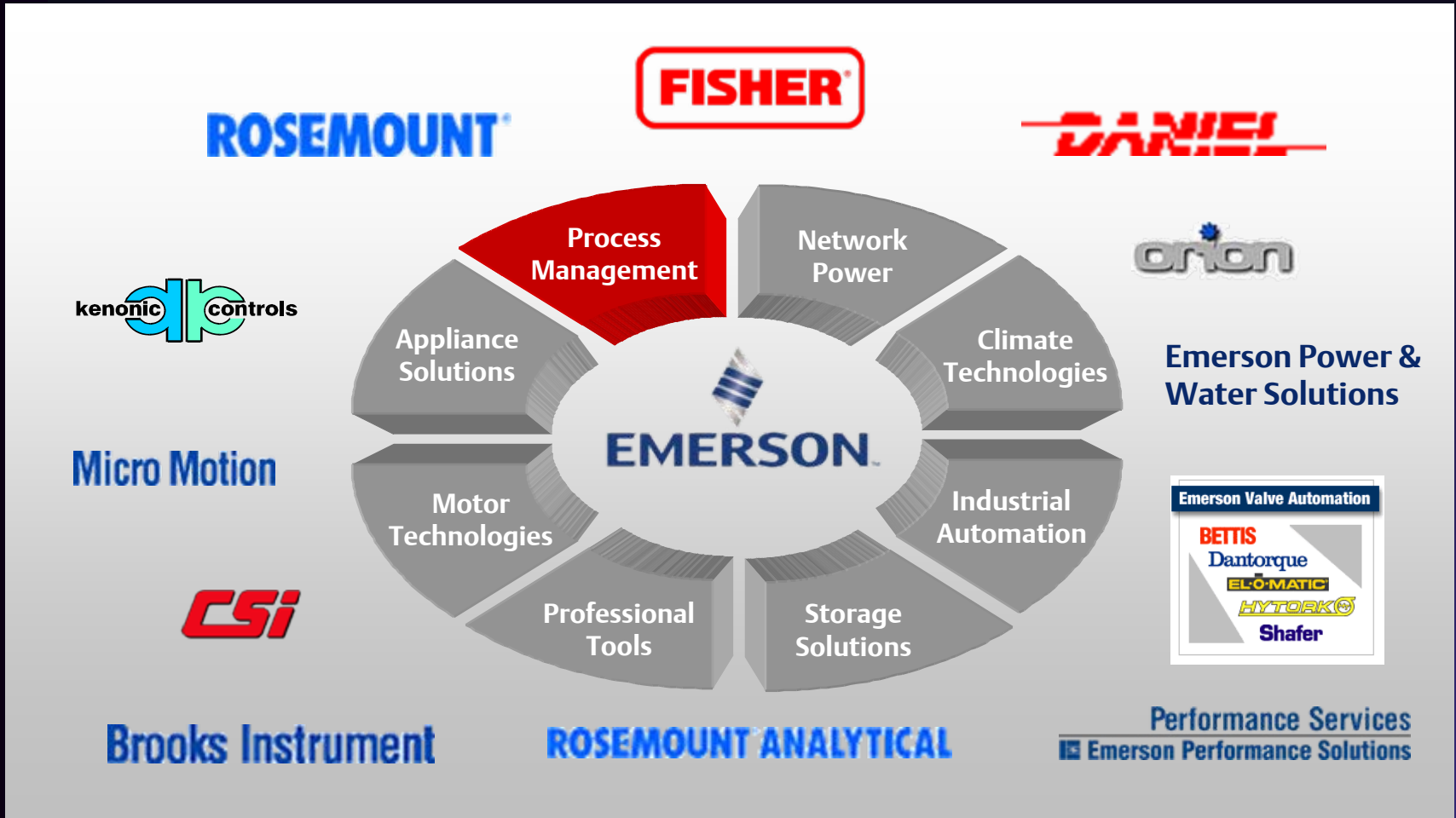
- The optional DS800 Development Suite lets you create control strategies using any of these 5 IEC 61131-3 graphical languages:
  - sequential function chart
  - function block diagram
  - ladder diagram
  - structured text
  - instruction list.
- A graphical flow chart language is also provided.



# User C Program Capability

- You can order custom application programs developed in User C to provide functionality not included in the firmware.
- Examples include:
  - V-Cone<sup>®</sup> calculations
  - Steam properties calculations
  - Communications programs
  - Special applications

# Go With the Leader in Process Control...



# ...And the Leader in Products and Service

## Highest Ranking vs. Major Process Competitors in 45 Pertinent Product Categories for 2008



	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	Total
<b>Emerson</b>	<b>24*</b>	<b>12</b>	<b>4</b>	<b>40**</b>
Rockwell Automation	12	6	0	18
Siemens	2	3	7	12
Invensys	1	4	6	11
Endress+Hauser	2	5	1	8
ABB	1	2	6	9
Yokogawa	0	3	2	5
Honeywell	1	0	2	3

\* Twice the #1 products than the next competitor.

\*\* 89% of Emerson products ranked 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> in 45 pertinent product categories.

# ***Go with Emerson Process Management!***

- For detailed information on the FloBoss 107 and other great Remote Automation Solutions products, contact your Emerson Process Management Local Business Partner or Sales Office. For their number call:
  - **1-800-807-0730**  
**(U.S. & Canada only)**
  - **1-641-754-3449 (Worldwide)**
- You can also visit us on the World Wide Web at:
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