

ControlWave® Station Manager 6-Run and 8-Run

ControlWave Station Manager is an application for the ControlWave Micro that performs natural gas flow measurement and station control for up to six or eight meter runs, distributed across up to six stations. When installed in the ControlWave Micro, ControlWave Station Manager is ideal for both new installations as well as station upgrades, where it replaces a mix of outdated RTUs and PLCs that are increasingly difficult to support.

The ControlWave Station Manager user interface allows you to easily configure inputs and outputs (I/O), station and run parameters, perform maintenance operations, view and collect logs, and monitor current station information.

ControlWave Station Manager is available as either a pre-configured application or as a modifiable version that allows full customization of the control portion of the application.

Features

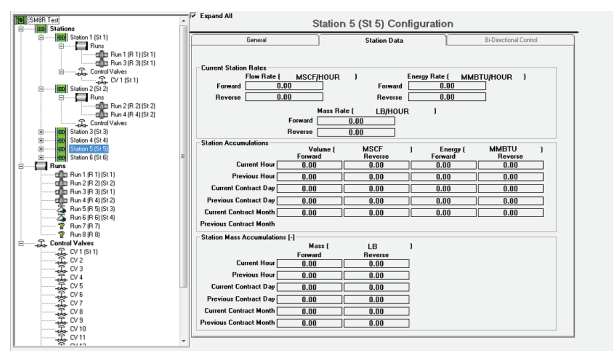
ControlWave Station Manager includes the following features:

- API 21.1 compliant flow measurement.
- Proven, accurate, and reliable measurement with support for numerous meters types.
- Support for up to six or eight meter runs, distributed across up to six stations.
- Multiple PID control loops are available for each station that allows control of up to 18 control valves.
- Run switching.
- Automatic dynamic I/O detection.
- Easily modified to meet your specific control requirements.
- Flexible communication via BSAP, Modbus, and ENRON Modbus protocols.
- Easy-to-use field technician configuration user interface.

Measurement

Flow measurement is performed using AGA 3 (versions 1985, 1992, and 2012), 5, 7, and 8 calculations, per API Chapter 21. Supported meter types include orifice, ultrasonic, turbine, venturi, annubar, Coriolis, V-cone, and positive displacement meters. The speed of sound is calculated using the AGA 10 calculation. In addition, the Auto-Adjust correction algorithm for Invensys (Rockwell) Auto-Adjust meters is supported.

ControlWave Station Manager supports both forward flow measurement and bi-directional flow measurement. Gas quality measurement is supported through serial and Ethernet IP interfaces for up to six or eight Daniel gas chromatograph streams (Daniel 2251, Daniel Custom Map, El Paso Custom map).



Station Configuration Screen

Station Configuration

You can configure up to six stations. The program performs hourly, daily, and monthly station calculations for flow, volume, energy, and mass.

Bi-directional flow measurement is supported by creating two stations: one for the forward flow direction and one for the reverse flow direction. You can configure up to three forward stations and three reverse stations. If bi-directional flow measurement is not required, you can configure all six stations as forward flow stations.

Run Configuration

You can configure up to six or eight meter runs and assign them to any one of the six stations. The software allows you to configure the meter type, measurement source, and run staging.

Control

ControlWave Station Manager allows three methods of performing station isolation. These three methods are not mutually exclusive, and any combination of the methods may be utilized simultaneously. Possible methods are:

- Mainline Valve
- Tube Stage Valves
- Bi-directional Control Valves

You can configure up to 12 remote control valves assigned in any combination across six stations. These non-modulating, open/close valves may be driven remotely (via the Modbus, Enron Modbus or BSAP interfaces), and have the option of operating in an arm-and-execute or execute-only mode.

You can configure up to 18 modulating control valves that can be controlled by any combination of the following PID control loops:

- Flow or energy primary control, with pressure (minimum or maximum outlet, minimum inlet) overrides for each station.
- Outlet pressure control, with flow, energy, or minimum inlet pressure overrides for each station.
- Maximum allowable operating pressure (MAOP) control, for each station.
- Meter protection control can be assigned to each meter run.
- Up to three general purpose PID control loops, where any available process variable may be assigned as the PV for the PID loop.

Meter run (or meter tube) switching control is available for each station. A tube switching valve is available for each run.

Bi-directional flow control is available for up to eight block valves for each bi-directional station. You can configure the operation of these valves to change the flow direction from forward to reverse and from reverse to forward.

If you want to customize station control to your specific operational methods, ControlWave Station Manager is available in a modifiable version that allows full customization of the control portion of the application using ControlWave Designer.

Sampler

You can configure up to 12 outputs (any combination of analog outputs and pulsed digital outputs) for use with a sampler. These outputs may also be used to control an odorizer.

Communication Flexibility

ControlWave Station Manager supports the following communications interfaces:

- Serial Enron Modbus Slave
 - IP (or Open) Enron Modbus Slave
 - Serial Bristol Synchronous/Asynchronous Protocol (BSAP) Slave
 - IP BSAP
 - Serial Modbus Master interface to Rosemount 3095 or Bristol 3808 Multivariable Transmitters with support for up to 12 transmitters.
 - Serial or IP Modbus Master interface to a number of different gas chromatographs. Up to eight streams distributed across up to six or eight gas chromatographs are supported.
 - Serial or IP Modbus Master interface to a number of different ultrasonic meters (Daniel, Instromet, SICK) with support for up to six or eight ultrasonic flow meters.
 - Serial or IP Modbus Master interface for Micro Motion Coriolis meters with support for up to six Coriolis meters.
 - Support for 18 wired HART® transmitters via HART BTI card or RS-485 serial port.
 - Support for 18 *WirelessHART*® transmitters.
- Note:** The Micro Motion Coriolis meter interface and the support for wired HART and *WirelessHART* transmitters are available **only** for the 6-run version.
- Customer Modbus Slave interface. A user-configurable Modbus Slave interface is available. You can configure whether the interface is serial or IP, data formats, and other configuration parameters. The data available via this interface is also user configurable.
 - Generic Modbus Master interfaces. There are 5 user-configurable Modbus interfaces available. You can configure whether the interface is serial or IP, data formats, and other configuration parameters. You can configure where the polled data is stored.

Historical Data Archives

The historical data system provides logging and storage of up to 840 hourly archives (logs) and 62 daily archives for each meter run and each gas chromatograph stream. The system can save the hourly archive as a .CSV file to a PC on demand or on a scheduled basis.

The historical data system also maintains an audit trail. The audit trail includes entries any time a configuration change is made that could affect measurement as well as time-stamped alarm records.

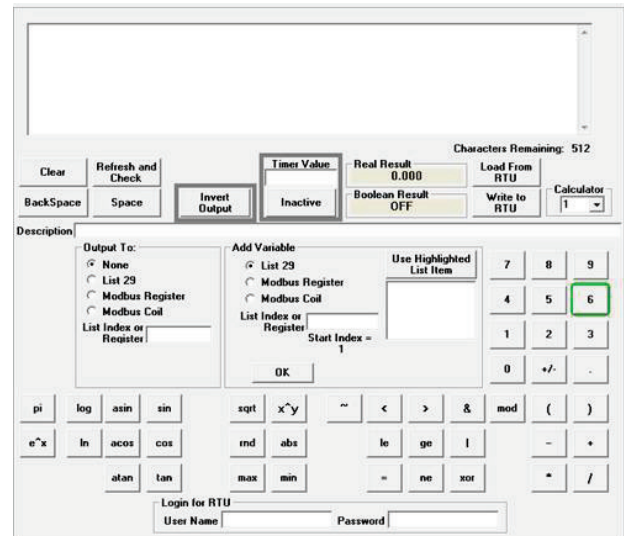
Configuration User Interface

ControlWave Station Manager includes a comprehensive set of configuration pages. After you configure the initial ControlWave Station Manager site, you can simply copy the existing ControlWave Station Manager site configuration to additional ControlWave Station Manager sites.

Math Function

The Math Function is a powerful and complex tool. With this tool you can develop calculations, functions, and controls that are not already a part of the ControlWave Station Manager application.

The Math Function can take inputs from multiple sources and perform mathematical and logical calculations on them. The tool writes the result to a variety of destinations. It is possible to freely mix mathematical and logical functions.



Math Function Screen

ControlWave Station Manager

Station Capacity	
Number of Runs	6 or 8
Number of Stations	6
Flow Direction	Forward and bi-directional
Gas Chromatograph	Up to 8 streams
Measurement	
AGA Calculations	AGA 3 (versions 1985, 1992, and 2012), 5, 7, and 8
Supported Meter Types	Orifice, ultrasonic, turbine, V-cone, Coriolis. Auto-Adjust, and positive displacement (PD) Venturi and annubar are also supported with local measurement in Station Manager
Location	6-Run Local in Station Manager
	8-Run Local in Station Manager or remote in a ControlWave XFC/GFC
Control	
Control Valves	18 modulating valves, 12 remote control valves
Bi-directional Control	8 valves per reverse station
Sampler	12 analog or pulse outputs
General Purpose PID	3 loops
Flow Control Modes	Flow, energy, pressure, MAOP, meter protection
Communications	
Communication Method	Serial and Ethernet IP
Protocols	BSAP, Modbus (master & slave), and ENRON Modbus (slave)
Gas Chromatograph Interface	Daniel 2251, Daniel custom, El Paso mapping, ABB, and Encal
Ultrasonic Interface	Daniel, Instromet, SICK
Historical	
Hourly Logs	31 variables per run
	20 variables per GC stream
Daily Logs	31 variables per run
Diagnostic	Analog and digital
User Configurable Archive	8 variables
Audit	Alarm and events
Compatibility	
PC Operating System	Windows® XP or Windows 7
ControlWave Firmware	Version 5.60 or higher
OpenBSI	Version 5.9 or higher
ControlWave Micro	150 MHz CPU with 64 MB RAM 12 to 24 V internal Power Supply Sequencer Module (PSSM)

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