



GULF COAST CONFERENCE 2015

ANALYZER CONTROL UNITS

- **GENERAL TOOL BETWEEN
PLANT AND LABORATORY**
- **LEARNING CURVE SHORTENED
SIGNIFICANTLY**
- **EASY CHANGE CONTROL**

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COMBINE ELEMENTS OF ACQUISITION AND ANALYSIS

The screenshot displays the Chrom Perfect File Editor interface, divided into four main panels:

- Component List Panel:** A table listing 10 components with their retention times and window widths.
- Detector Settings Panel:** Configuration for two detectors, including temperature, hydrogen pressure, and air pressure.
- Chromatogram Processing Panel:** Options for smoothing, baseline subtraction, and peak detection.
- Report Layout Panel:** Configuration for the report's structure, including headers, footers, and table content.

| Component | In Plot | Component Name | Retention Time, min. | Window Width, min. | Ref. Comp. # | Proxy Comp. # | Group # | Low Alarm |
|-----------|-------------------------------------|----------------|----------------------|--------------------|--------------|---------------|---------|-----------|
| 1 | <input checked="" type="checkbox"/> | PEN | 1.536 | 0.1 | 0 | 0 | 0 | 0 |
| 2 | <input checked="" type="checkbox"/> | n-HEX | 2.204 | 0.1 | 0 | 0 | 0 | 0 |
| 3 | <input checked="" type="checkbox"/> | Benzene | 2.689 | 0.1 | 0 | 0 | 0 | 0 |
| 4 | <input checked="" type="checkbox"/> | cy-HEX | 3.09 | 0.1 | 0 | 0 | 0 | 0 |
| 5 | <input checked="" type="checkbox"/> | n-Heptane | 3.357 | 0.1 | 0 | 0 | 0 | 0 |
| 6 | <input checked="" type="checkbox"/> | Toluene | 4.125 | 0.1 | 0 | 0 | 0 | 0 |
| 7 | <input checked="" type="checkbox"/> | n-octane | 4.542 | 0.1 | 0 | 0 | 0 | 0 |
| 8 | <input checked="" type="checkbox"/> | m,p-xylene | 6.096 | 0.1 | 0 | 0 | 0 | 0 |
| 9 | <input checked="" type="checkbox"/> | o-xylene | 6.413 | 0.1 | 0 | 0 | 0 | 0 |
| 10 | <input checked="" type="checkbox"/> | p-benzene | 7.164 | 0.1 | 0 | 0 | 0 | 0 |

Detector #1 Settings:
Temperature, deg. C: 250
Hydrogen pressure: 25
Air pressure (ignite): 10
Air pressure (run): 25
 Invert data

Detector #2 Settings:
Temperature, deg. C: 350
Hydrogen pressure: 26
Air pressure (ignite): 13
Air pressure (run): 26
 Invert data

Chromatogram Processing:
Type of Smoothing: None
Smoothing Time (sec): 0
 Subtract Baseline Chromatogram
Initial peak detect threshold: -4
Initial peak width, minutes: 0.1
Calibration File Name: Atest.cal

Report Layout:
New Element: Header, Include File, Include Image, Printout, Chrom Plot, Cal Plot, SEC Plot, SEC CAL Plot, Peak Table, Group Table, Slice Table, MW Table, InStep Report, Entry Table
Layout Width: Page Width, Report Width
Orientation: Portrait, Landscape
Report width in: []

Version = 2 Format: CP32 Modified on 10/15/2013 6:20:08 AM test

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COMMUNICATE TO THE UNIVERSE

- MAKE DATA AVAILABLE TO ALL CUSTOMERS
- CREATE STANDARD PDF FILES ON THE FLY
- E-MAIL REPORTS AND PLOTS
- EVALUATE ANALYSIS AND PRODUCE ALARMS
- CONVERSE WITH SCADA

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SYMMETRIC INSTRUMENT CONTROL

THE ANALYZER INSTRUMENT IN THE PLANT OR AT THE SAMPLE SITE

THE ANALYTICAL INSTRUMENT IN THE LABORATORY

Detector #1

| | |
|-----------------------|-----|
| Temperature, deg. C | 250 |
| Hydrogen pressure | 25 |
| Air pressure (ignite) | 10 |
| Air pressure (run) | 25 |

Invert data

Detector #2

| | |
|-----------------------|-----|
| Temperature, deg. C | 350 |
| Hydrogen pressure | 26 |
| Air pressure (ignite) | 13 |
| Air pressure (run) | 26 |

Invert data

| | |
|------------------------------|-----|
| Oven Temperature, deg C | 250 |
| Delay time, seconds | 5 |
| Splitless time, seconds | 0 |
| Split vent time, seconds | 30 |
| Loop injection time, seconds | 10 |
| Idle Flow fraction, percent | 33 |

Initial Time, seconds: 0

Initial temperature, C: 35

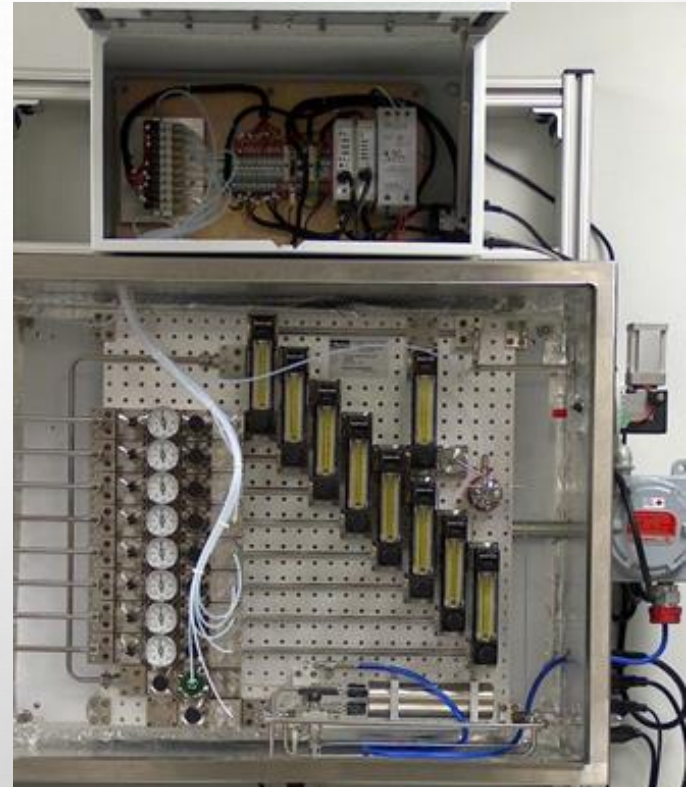
Program time = 531.00 seconds

| Ramp # | Rate Deg C/sec | Final Temp. | Final Time, sec | Ramp Start, sec | Ramp End, sec |
|--------|----------------|-------------|-----------------|-----------------|---------------|
| 1 | 0.5 | 300 | 1 | 0 | 530 |
| 2 | 0 | 375 | 0 | 0 | 530 |

SAMPLING CONTROL

AUTOMATED SAMPLE STREAMS

- OFF THE SHELF DEVICES
- CUSTOM CONFIGURED



PROCESS CONTROL

- **OPC**

- CHROMPERFECT OLE FOR PROCESS CONTROL

- **ANALOG OUTPUT**

- CHROMPERFECT ANALOG OUTPUT
- UNLIMITED SPECIATED COMPONENT VALUES

- **MODBUS OUTPUT**

- CHROMPERFECT PROCESS CONTROL
- CUSTOM BUILT REPOSITORY THAT'S LOCAL OR CLOUD BASED

ANALOG OUTPUT

- CURRENT LOOP -- 4-20MA
- VOLTAGE OUTPUT -- VARIOUS
- PLC

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DATA CONTROL

To help protect your privacy, PowerPoint has blocked automatic download of this picture.

MODBUS Configuration

IP Address

Controller ON

MODBUS Repository Configuration

| | Name |
|----|------|
| 1 | |
| 2 | |
| 3 | |
| 4 | IBP |
| 5 | |
| 6 | 10 % |
| 7 | |
| 8 | 20 % |
| 9 | |
| 10 | 30 % |
| 11 | |
| 12 | 50 % |
| 13 | |
| 14 | 70 % |
| 15 | |
| 16 | 90 % |
| 17 | |
| 18 | FBP |

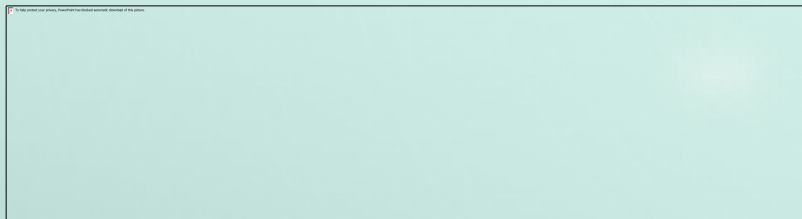
Modbus ID

DATA CONTROL

- OPC
 - OLE FOR PROCESS CONTROL
 - OPEN PLATFORM COMMUNICATIONS (1996)
 - INTEGRATE INTO EXISTING DCS SYSTEMS

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PLANT TO LABORATORY



NatGas

Instrument

Selected Instrument:

Instrument Status:

Method

Governing Method file name:

Sample

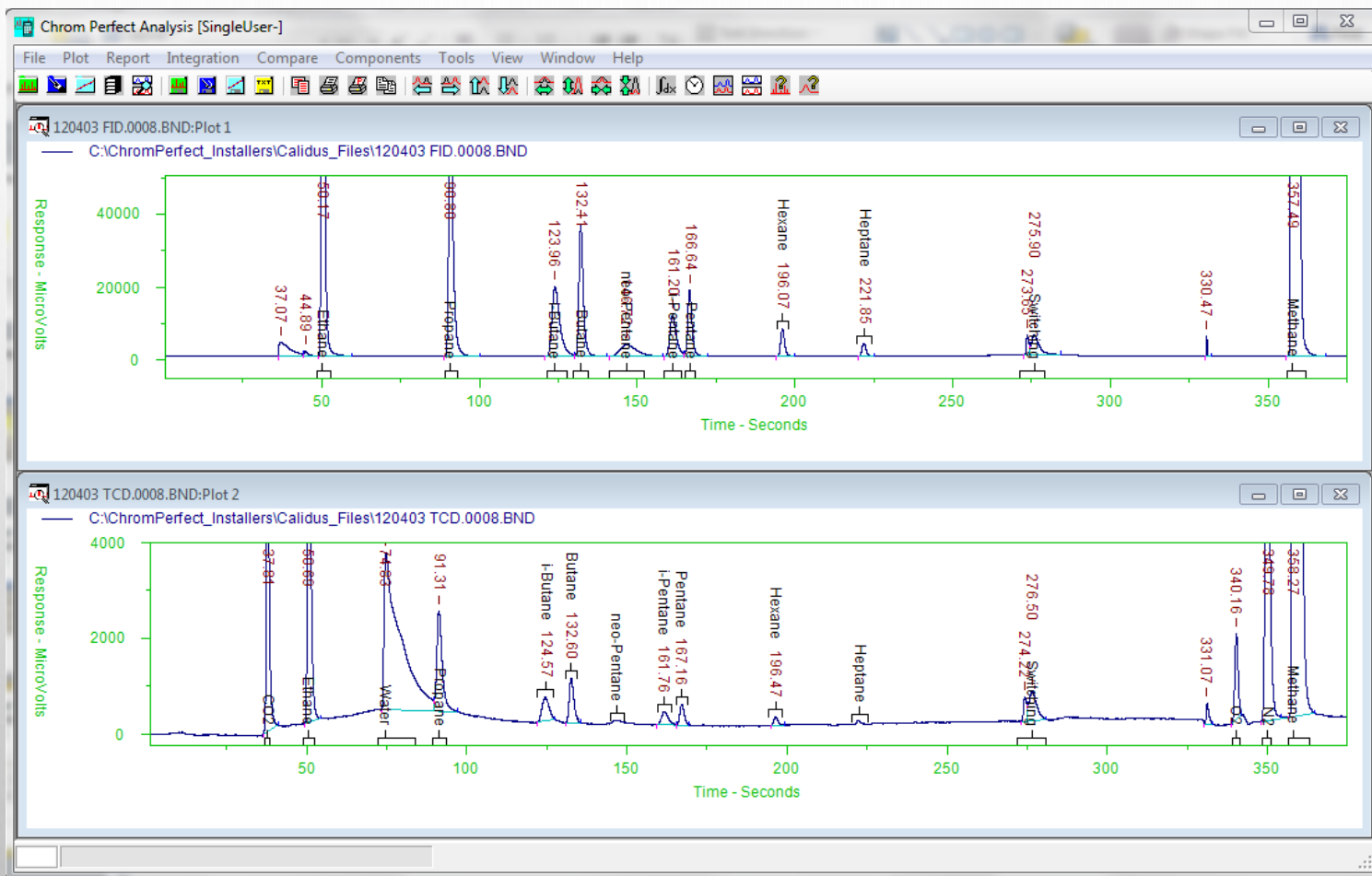
Sample Name:

Disk File Base Name:

Calibration run Calibration Level:

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PLANT TO LABORATORY



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Raw File Name = C:\CPData\NatGasTest\NatGasStd.1.raw
Sample Name = NatGas Standard
Method File Name = C:\CPData\NatGasTest\NatGas.MET

| Name | RT | Amt | W Amt |
|------|--------|--------|--------|
| N2 | 1.000 | 5.000 | 5.000 |
| O2 | 1.500 | 1.000 | 1.000 |
| CO2 | 2.000 | 1.000 | 1.000 |
| C1 | 3.000 | 63.000 | 63.000 |
| C2 | 4.000 | 9.000 | 9.000 |
| C3 | 5.000 | 6.000 | 6.000 |
| C4 | 6.000 | 3.000 | 3.000 |
| ic4 | 6.500 | 3.000 | 3.000 |
| C5 | 7.000 | 1.000 | 1.000 |
| ic5 | 7.500 | 1.000 | 1.000 |
| C6 | 8.500 | 0.500 | 1.000 |
| C7 | 9.500 | 0.500 | 1.000 |
| C8 | 10.500 | 0.500 | 1.000 |
| C9 | 11.500 | 0.500 | 1.000 |
| C10 | 12.500 | 0.500 | 1.000 |
| C11 | 13.500 | 0.500 | 1.000 |
| C12 | 14.500 | 0.500 | 1.000 |

Total Amount = 100
Total Table Amt = 96.5
Total Table W Amt = 100

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| Name | Mole % | Normalized Mole % |
|------|--------|-------------------|
| C1 | 63.00 | 63.00 |
| C2 | 9.00 | 9.00 |
| C3 | 6.00 | 6.00 |
| C4 | 3.00 | 3.00 |
| ic4 | 3.00 | 3.00 |
| C5 | 1.00 | 1.00 |
| ic5 | 1.00 | 1.00 |
| C6 | 1.00 | 1.00 |
| C7 | 1.00 | 1.00 |
| C8 | 1.00 | 1.00 |
| C9 | 1.00 | 1.00 |
| C10 | 1.00 | 1.00 |
| C11 | 1.00 | 1.00 |
| C12 | 1.00 | 1.00 |
| N2 | 5.00 | 5.00 |
| O2 | 1.00 | 1.00 |
| CO2 | 1.00 | 1.00 |

Total Mole % 100.00 PASS

BTU/CF at 14.65 PSI
 Ideal, Dry 1,708.03
 Ideal, wet 1,678.14
 Real, Dry 1,723.07
 Real, wet 1,692.92

Specific Gravity
 Ideal 1.089
 Real 1.098

Z for sample 0.99127
 Z for air 0.99963

WOBBE Index
 Ideal, Dry 1,637.09
 Ideal, wet 1,608.45
 Real, Dry 1,651.50
 Real, wet 1,622.60

Reid vapor Pressure 934.08
 Mass % in liquid phase 54.550
 Mass % in gas phase 45.450
 Calculated sample density 0.607
 Z for gas phase 0.79763

AdjVolumeRatio 3.94
 SampleVolG 233.29

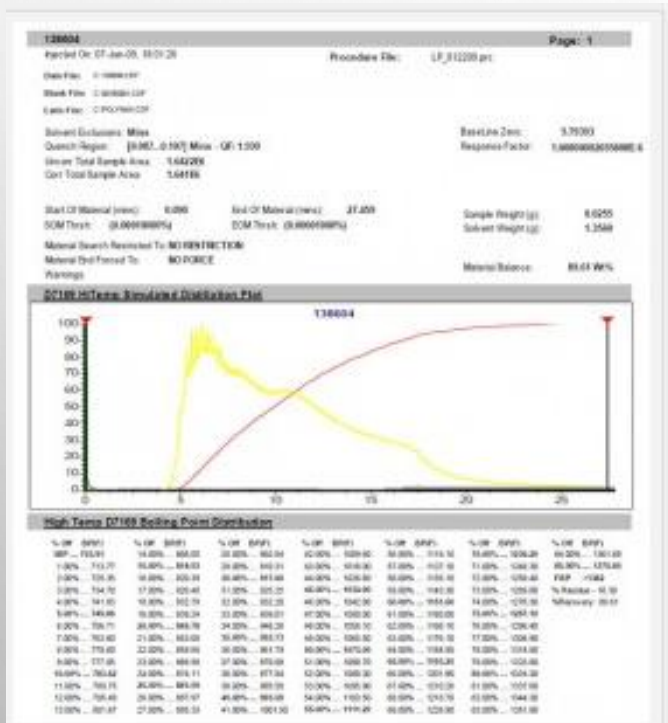
| Name | Liq Mole% | Gas Mole% | VP 100 | Partial Pressure |
|------|-----------|-----------|-----------|------------------|
| C1 | 18.81 | 79.46 | 4,947.31 | 930.50 |
| C2 | 11.85 | 7.94 | 784.87 | 92.97 |
| C3 | 15.29 | 2.54 | 194.59 | 29.75 |
| C4 | 9.84 | 0.45 | 53.63 | 5.28 |
| ic4 | 9.43 | 0.61 | 75.42 | 7.11 |
| C5 | 3.56 | 0.05 | 14.81 | 0.53 |
| ic5 | 3.50 | 0.07 | 22.74 | 0.80 |
| C6 | 3.65 | 0.01 | 3.73 | 0.14 |
| C7 | 3.68 | 0.00 | 0.96 | 0.04 |
| C8 | 3.68 | 0.00 | 0.27 | 0.01 |
| C9 | 3.68 | 0.00 | 0.06 | 0.00 |
| C10 | 3.68 | 0.00 | 0.02 | 0.00 |
| C11 | 3.68 | 0.00 | 0.00 | 0.00 |
| C12 | 3.68 | 0.00 | 0.00 | 0.00 |
| N2 | 0.84 | 6.55 | 9,140.19 | 76.70 |
| O2 | 0.15 | 1.32 | 10,553.77 | 15.43 |
| CO2 | 0.97 | 1.01 | 1,215.11 | 11.83 |

Average MW Mn Mw P. I.
 Sample 31.53 61.61 1.954
 Liquid phase 63.38 93.74 1.479
 Gas phase 19.67 23.04 1.171

PLANT TO LABORATORY

- SIMDIST

D-7798



Instrument

Selected Instrument

Digital Data

Instrument Status

Free

Method

Governing Method file name

C:\CPData\SampleData\Atest.smt

Sample

Sample Name

Total Sulfur

Disk File Base Name

Sulfur100

Calibration run

Calibration Level

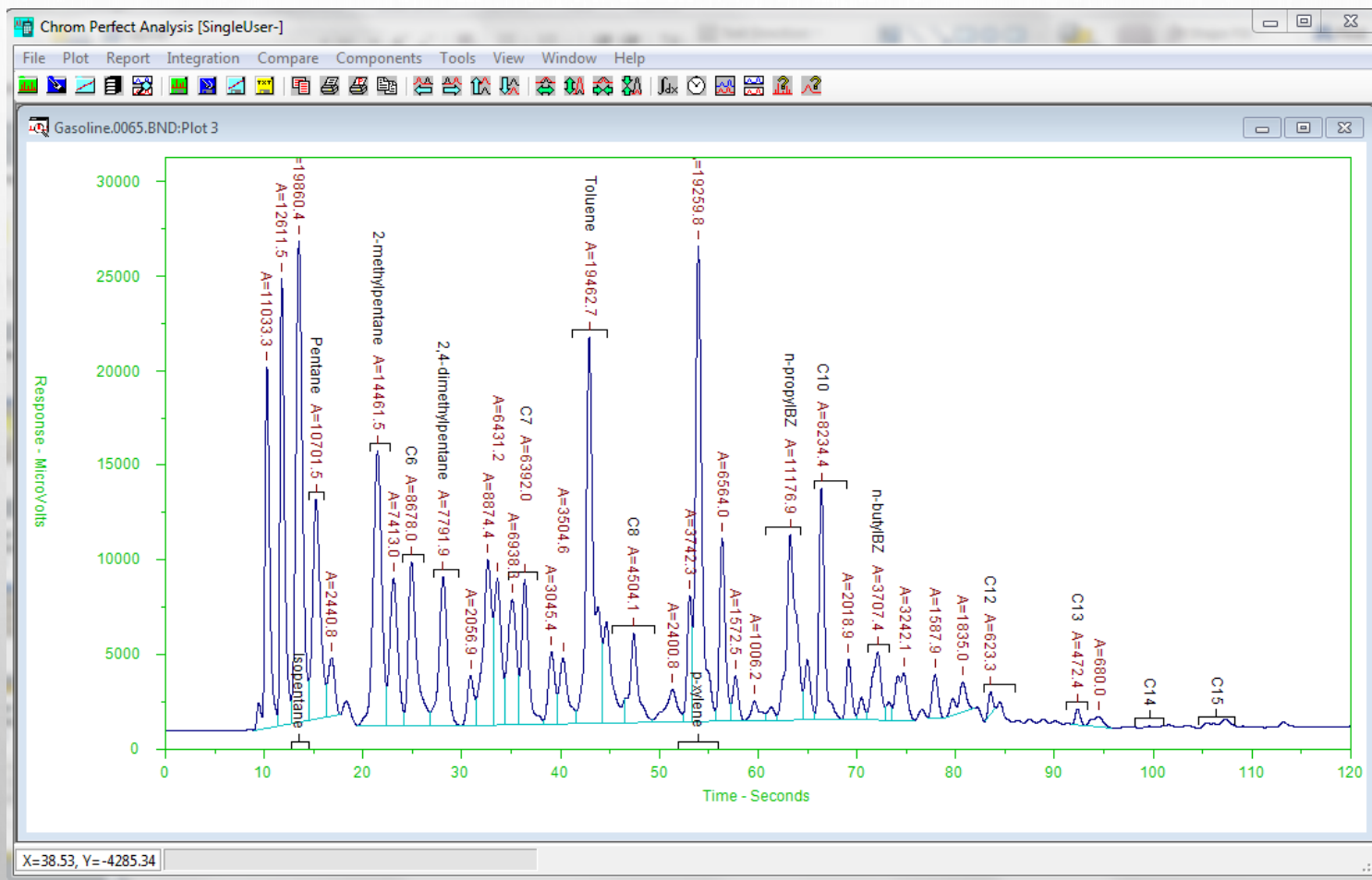
1

Download

Start

Stop

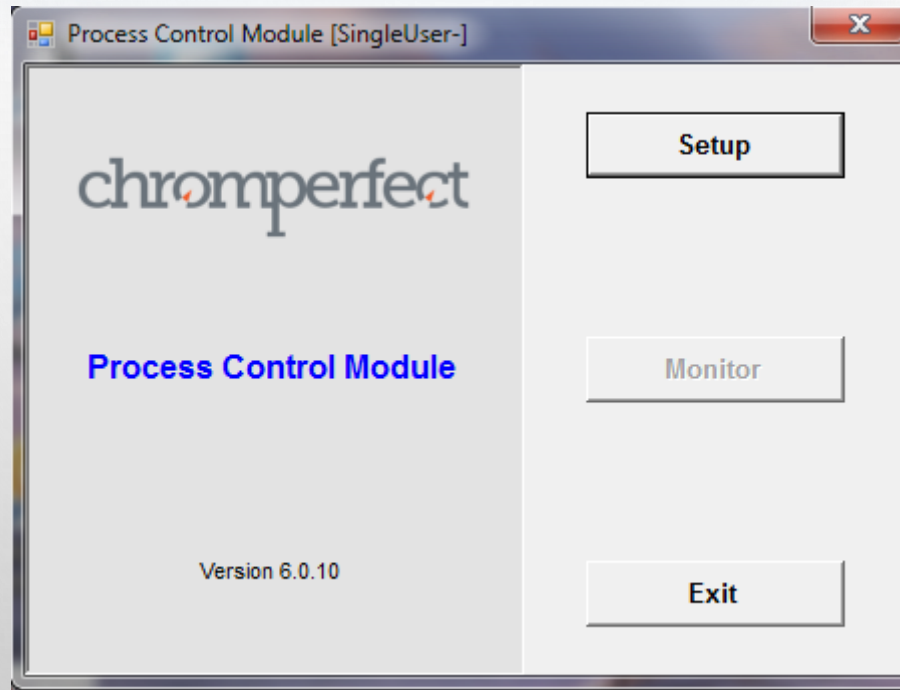
PLANT TO LABORATORY



LABORATORY TO PLANT

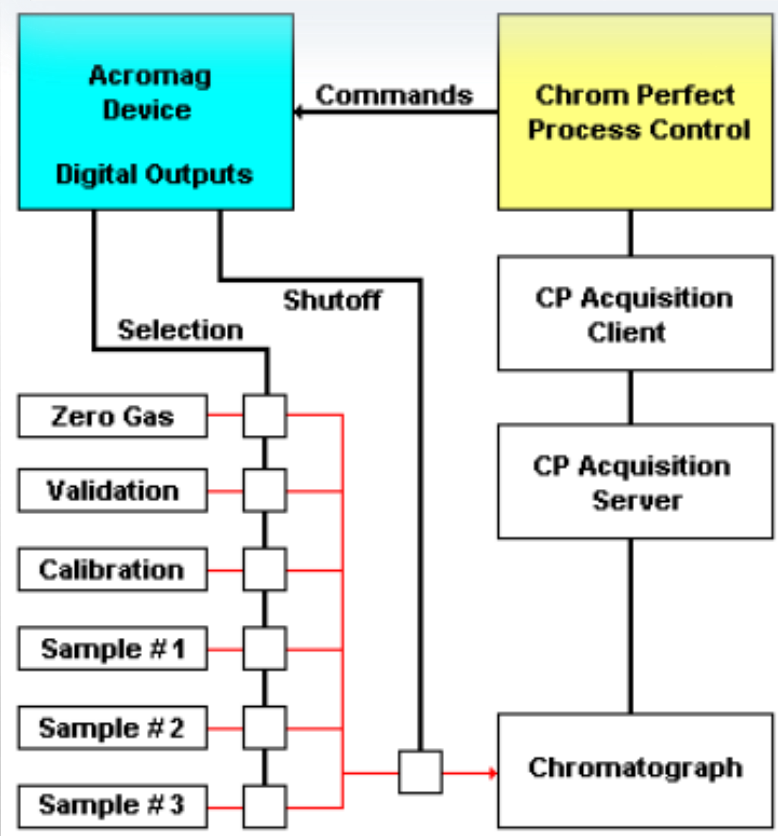
- ANALYTICAL METHODS
- FILE COMPATIBILITY
- RESULT CORRELATION
- CHROMPERFECT PROCESS CONTROL

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Instrument #1 Configuration

General | **AcroMag** | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

Instrument Name: Digital Data

Injection Delay Time, sec.: 2

Recovery Delay Time, sec.: 4

Message Background Color: White

OK Cancel

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Instrument #1 Configuration

General | AcroMag | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

| | Model | IP Address |
|---------------------------|------------|----------------|
| Digital VO "A" (required) | 983EN | 192.168.20.101 |
| Digital VO "B" (optional) | 951EN | 192.168.20.102 |
| RTD Module (optional) | 966EN-6006 | 192.168.20.103 |

OK Cancel

I/O Gear Configuration

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Instrument #1 Configuration

General | AcroMag | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

| | | | | | | |
|------------------------------|------|-------------------------------------|--------------|------------------------------|----|--------------------------|
| Zero Gas Stream Port Number | A1 | <input type="checkbox"/> | | Maintenance Mode Port Number | A4 | <input type="checkbox"/> |
| Shutoff Valve Port Number | None | <input type="checkbox"/> | | Priority Stream Port Number | A5 | <input type="checkbox"/> |
| Shutoff Valve Duration, sec. | 1 | <input checked="" type="checkbox"/> | Use MFL file | Priority Stream Number | B0 | |
| Heater Control Port Number | A2 | <input type="checkbox"/> | | | | |
| Cooler Control Port Number | A3 | <input type="checkbox"/> | | | | |

OK Cancel

Specialized Ports

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The screenshot shows a software window titled "Instrument #1 Configuration" with a close button in the top right corner. The window has several tabs: "General", "AcroMag", "Special Ports", "Scheduled Streams", "Temperature Sensing and Control", "External Alarms", and "Internal Alarms". The "Scheduled Streams" tab is selected. On the left side, there is a "Stream Number" section with a dropdown menu showing "A0" and a yellow square icon. Below this is a "Configure" button. On the right side, there is a yellow highlighted area containing the following text: "Port: A0", "Name:", "Connected: No", "Type: Calibration", "Scheduled: Priority", and "Run Number:". At the bottom right of the window, there are "OK" and "Cancel" buttons.

Scheduled Stream Configuration

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Instrument #1 Configuration

General | AcroMag | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

| | | | | | |
|------------------------|----|----------|-----|---|----|
| RTD Port Number (Main) | 0 | (Backup) | 1 | <input checked="" type="checkbox"/> Controller ON | |
| Upper Alarm Limit | 65 | HR Addr | 200 | Upper Threshold (cool ON) | 55 |
| Lower Alarm Limit | 35 | | | Lower Threshold (heat ON) | 45 |
| | | | | Refractory Time, min. | 1 |

OK Cancel

Analyzer Enclosure Conditions

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Instrument #1 Configuration

General | AcroMag | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

| | Port Number | HR Addr | Function |
|---------|-------------|---------|-------------|
| Alarm A | B1 | 101 | Validation |
| Alarm B | B2 | 102 | Calibration |
| Alarm C | None | 0 | |
| Alarm D | None | 0 | |

OK Cancel

External Alarms from SCADA

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Instrument #1 Configuration

General | AcroMag | Special Ports | Scheduled Streams | Temperature Sensing and Control | External Alarms | Internal Alarms

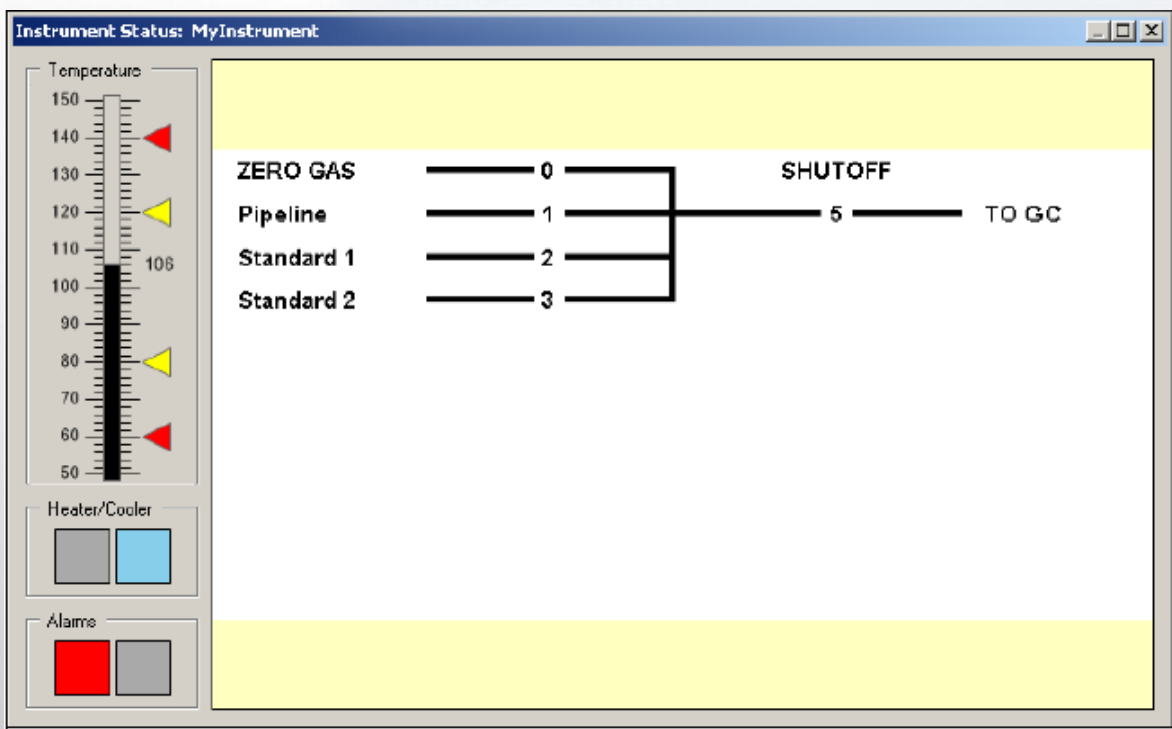
HR Address

| | |
|-------------------------------|----------------------------------|
| Out-Of-Service Flag | <input type="text" value="104"/> |
| Calibration / Validation Flag | <input type="text" value="105"/> |

OK Cancel

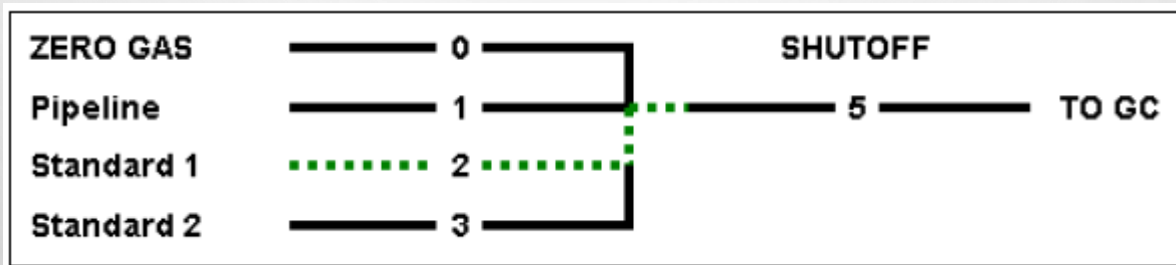
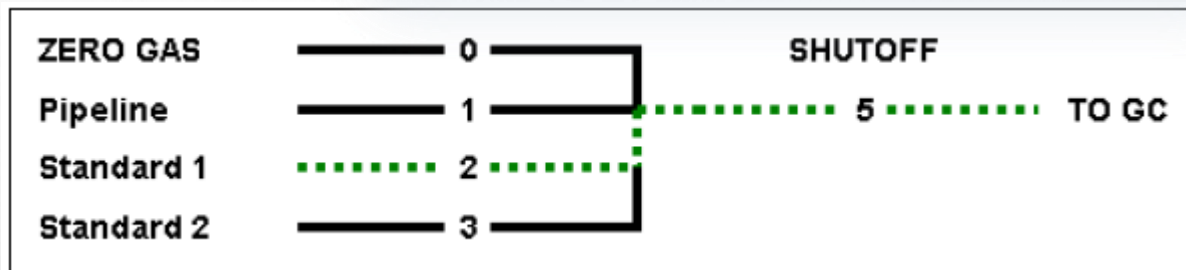
Internal Alarms visible to SCADA

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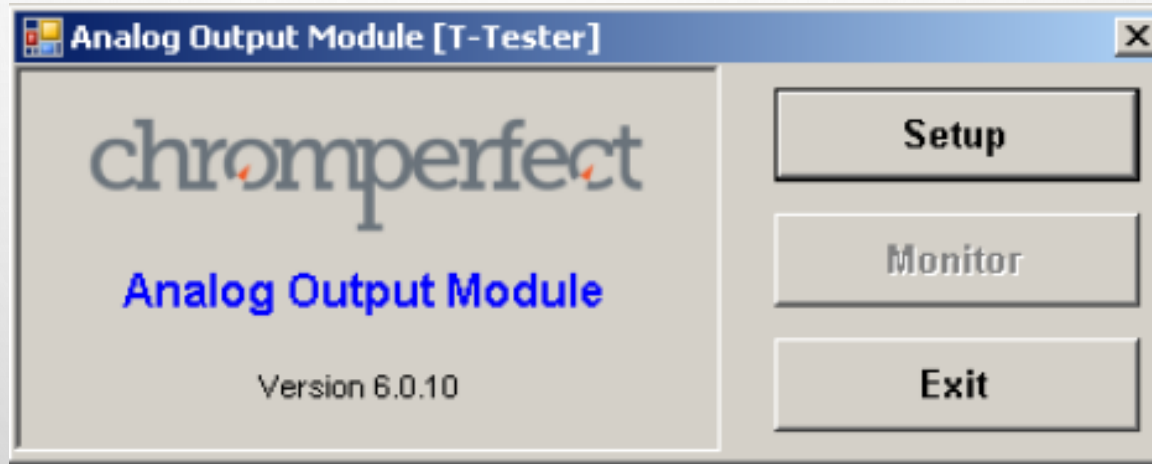
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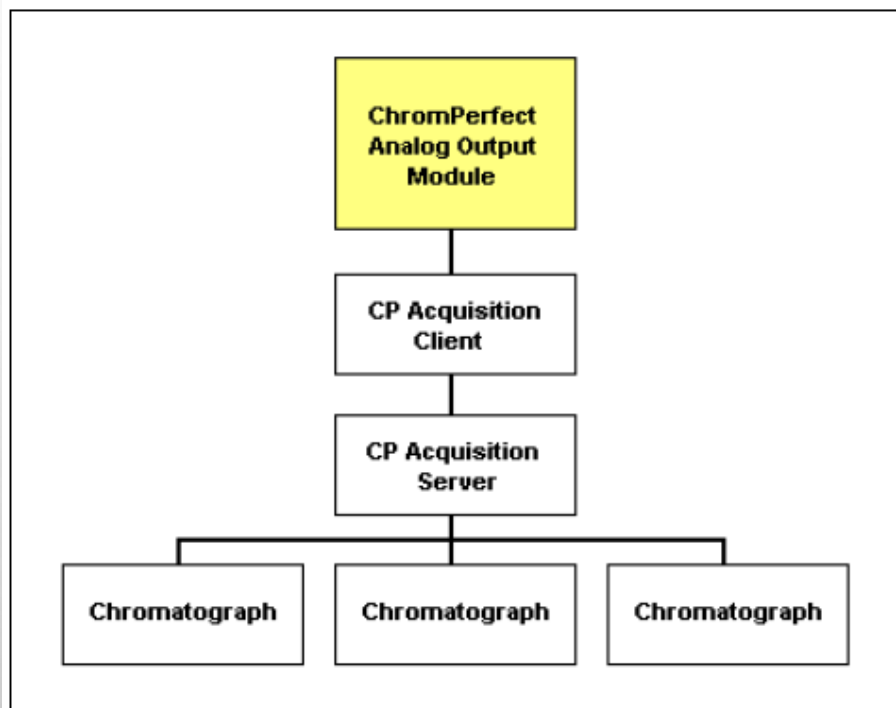
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CHROMPERFECT ANALOG OUTPUT CPAO



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CHROMPERFECT ANALOG OUTPUT



CHROMPERFECT ANALOG OUTPUT

The screenshot shows a 'Configuration' window with a table of 'Programmed Hardware I/O Ports' and a list of 'Available Port Types'. The table has 7 rows and 8 columns: Port #, Port #, Zero, Span, Default, and Tag Name. The 'Available Port Types' list includes Analog Input, Digital Input, Analog Output, and Digital Output.

| Port # | Port # | Zero | Span | Default | Tag Name |
|--------|--------|------|------|---------|----------|
| 1 | 1 | 0 | 2 | | ana1in |
| 2 | 2 | 0 | 2 | | ana2in |
| 3 | 1 | | | | dg1in |
| 4 | 2 | | | | dg2in |
| 5 | 1 | 0 | 2 | 1 | |
| 6 | 2 | 0 | 2 | 1 | |
| 7 | 2 | | | Lo | |

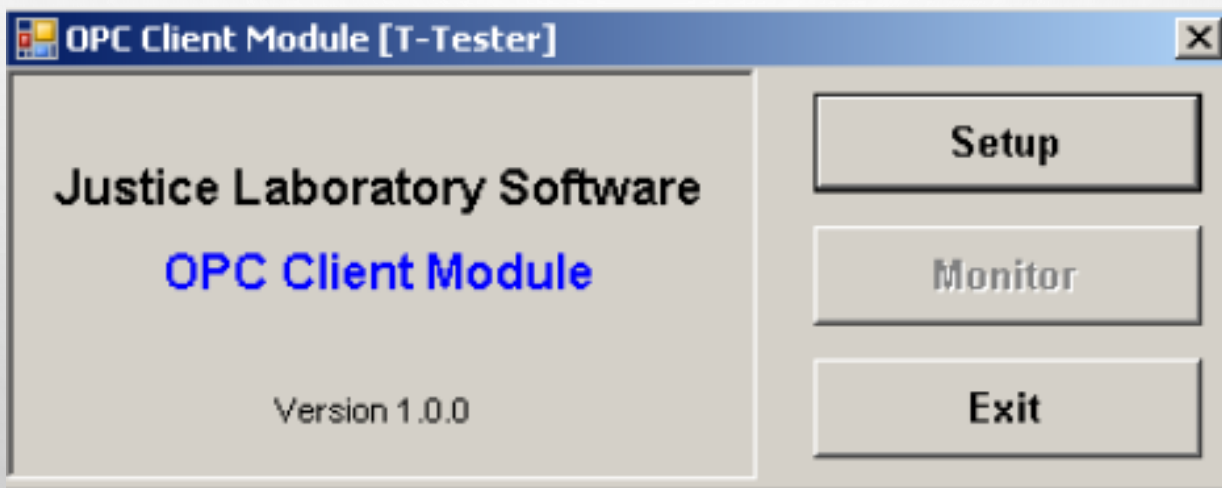
Available Port Types:

- Analog Input
- Digital Input
- Analog Output
- Digital Output

Buttons: Insert, Delete, Move Up, Move Down, Copy Down, Assign, OK, Cancel

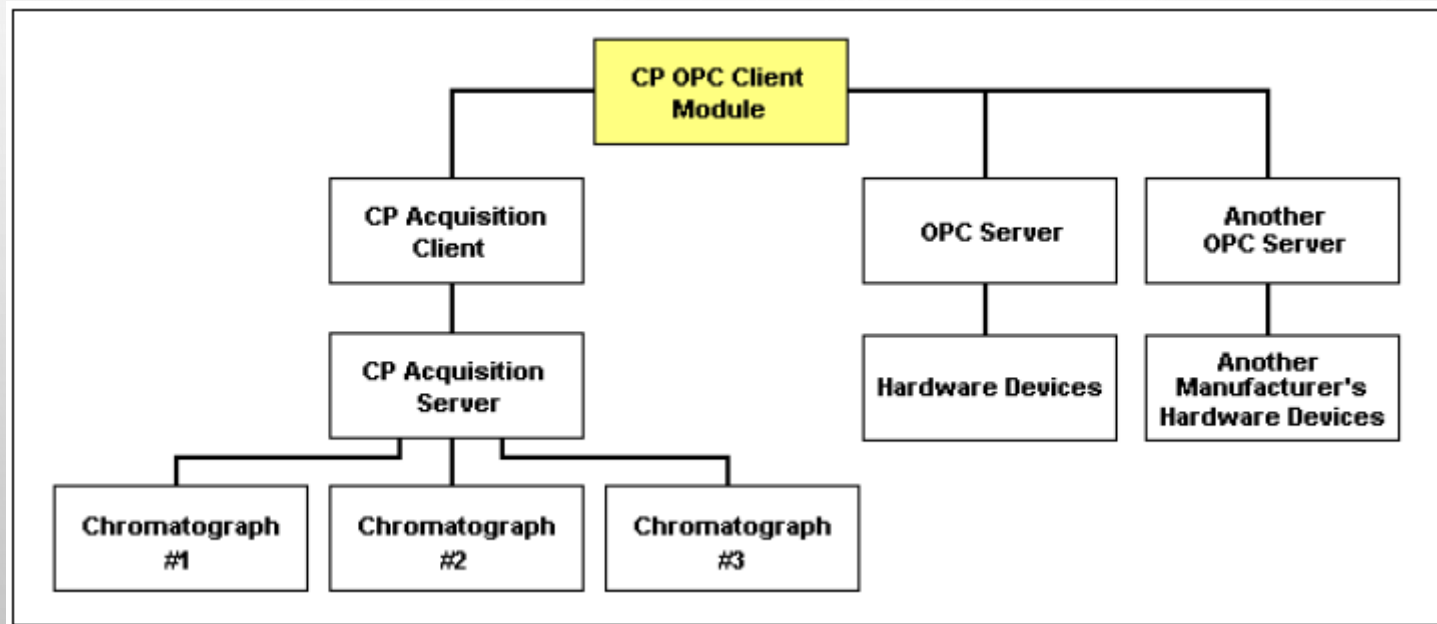
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CHROMPERFECT OPEN PLATFORM COMMUNICATIONS



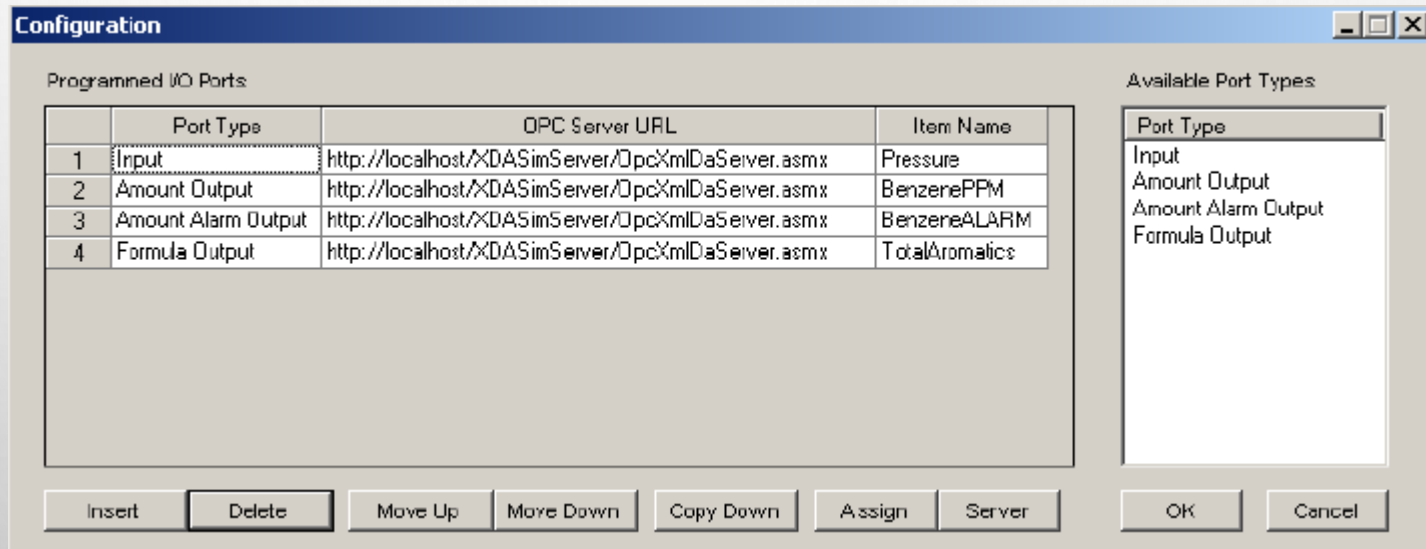
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CHROMPERFECT OPEN PLATFORM COMMUNICATIONS



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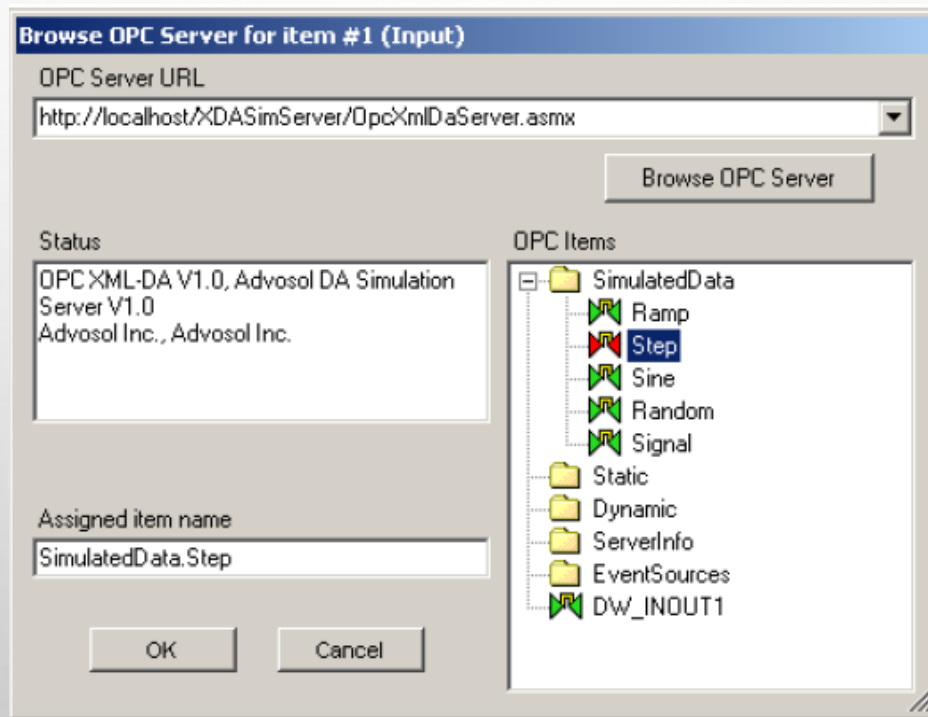
CHROMPERFECT OPEN PLATFORM COMMUNICATIONS



Configure Client

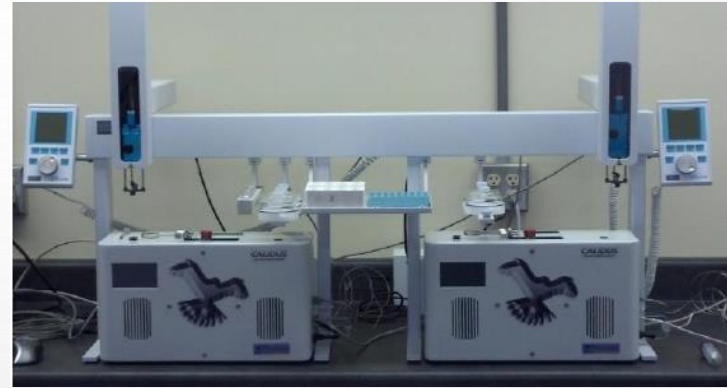
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CHROMPERFECT OPEN PLATFORM COMMUNICATIONS



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PLANT AND LABORATORY



11/12/2015

The logo for Chromperfect is displayed in a dark teal, lowercase, sans-serif font. The letter 'i' is lowercase and has a red dot above it. The background is a light gray gradient with several realistic water droplets of various sizes scattered across it.

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Thank You