



Extorr Inc.
307 Columbia Road
New Kensington, PA 15068
724-337-3000
Fax 724-337-8322

Application Note Number104: Introduction to Streaming XML

Abstract: Here is a very short write-up on how XML data is transported in and out of the Extorr RGA.

Two XML data files are associated with the Extorr Residual Gas Analyzers. One is the .cfg configuration file which sets all of the parameters of operation and data acquisition for the unit. The other is the .xml data file.

It is our intent to allow the user to determine the structure of the XML data file. This will be done by selecting from a form generated in the Vacuum Plus software. This should be implemented within a month. Currently, the data file consists of header information on Low Mass, High Mass, samples per amu, and output units. This header is then followed by a number of data points. This number of points is given by samples/amu x (high mass - low mass + 1). When in streaming mode, there is a continuous flow of header and data, header and data, etc.

An example of the data file is given below.

```
<?xml version="1.0" encoding="us-ascii" ?>
=<Data LowMass="14" HighMass="19" SamplesPerAMU="8" Units="Torr" Sample="0">
<Sample Value="-4.80521e-012" />
<Sample Value="4.90272e-012" />
<Sample Value="3.49013e-011" />
<Sample Value="2.13785e-010" />
<Sample Value="2.38185e-010" />
<Sample Value="1.70573e-010" />
<Sample Value="1.16129e-011" />
<Sample Value="1.44788e-012" />
<Sample Value="1.04575e-012" />
<Sample Value="-3.8262e-013" />
<Sample Value="1.86295e-011" />
<Sample Value="2.13322e-010" />
<Sample Value="2.52524e-010" />
<Sample Value="1.75088e-010" />
<Sample Value="2.61942e-011" />
<Sample Value="1.25229e-012" />
<Sample Value="-2.86834e-012" />
<Sample Value="2.62114e-012" />
<Sample Value="1.64358e-010" />
<Sample Value="1.00085e-009" />
<Sample Value="1.17773e-009" />
<Sample Value="8.14476e-010" />
<Sample Value="1.09915e-010" />
<Sample Value="7.56115e-012" />
<Sample Value="1.92803e-012" />
<Sample Value="3.37541e-012" />
<Sample Value="5.62092e-010" />
<Sample Value="2.50811e-009" />
<Sample Value="2.8665e-009" />
<Sample Value="1.99793e-009" />
```

```
<Sample Value="1.79753e-010" />
<Sample Value="1.34216e-012" />
<Sample Value="1.11096e-011" />
<Sample Value="2.38959e-011" />
<Sample Value="1.86811e-009" />
<Sample Value="7.15505e-009" />
<Sample Value="8.63439e-009" />
<Sample Value="6.02352e-009" />
<Sample Value="4.11353e-010" />
<Sample Value="8.15777e-013" />
<Sample Value="2.86842e-012" />
<Sample Value="-1.2607e-013" />
<Sample Value="5.3608e-011" />
<Sample Value="2.04398e-010" />
<Sample Value="2.53127e-010" />
<Sample Value="1.79202e-010" />
<Sample Value="2.55128e-011" />
<Sample Value="5.37074e-012" />
</Data>
```

An example of the configuration file which was operating as the above data was generated is given below.

```
<?xml version="1.0" encoding="us-ascii"?>
<ConfigurationData>
  <CommunicationParameters
    Port="COM2"
    Baud="115200"
    PacketFrequency="5.0"
    PacketTimeout="1.0"
    CommunicationsType="1"
    UserFrequency="5.0"
    UserTimeout="1.0"
    NamedPort="VacuumPlus"
  />

  <ConfigurationParameters
    Filename="C:\Documents and Settings\Lutz
Kurzweg\Desktop\sn132_factory_cal.cfg"
    TimeStamp="07d3000b00030013000f0039002d02ee"
    DateTime="11/19/2003 3:57:45 PM"
    Caption=""
    Serial="0"
    Model="0"
  />

  <ScanParameters
    ScanSpeed="144"
    LowMass="6"
    HighMass="48"
    SamplesPerAMU="8"
  />

  <OperatingParameters
    Mode="Trend"
    Focus1="-35"
    Focus2="-20"
    ElectronEnergy="68"
    FilamentEmission="3.0"
    AutoZero="Off"
    ScanMode="Sweep"
```

```
Filament="1"
PressureUnits="Torr"
/>

<CalibrationParameters
  LowCalMass="1"
  LowCalResolution="672"
  LowCalPosition="0.21"
  LowCalIonEnergy="4.2"
  HighCalMass="300"
  HighCalResolution="1895"
  HighCalPosition="0.50"
  HighCalIonEnergy="5.3"
  TotalAmpOffset="0"
  PartialAmpOffset="0"
  TotalIntegratingCap="9.97"
  PartialIntegratingCap="3.05"
  RFSettleTime="50"
  SWSettleTime="10"
  Pirani1ATM="2.25670"
  PiraniZero="0.31365"
  PiraniAutoRecalibrate="0"
  PartialSensitivity="8.00e-004"
  TotalSensitivity="1.00e+000"
  debug="0"
/>

<MassTableParameters
  Samples="200"
>
  <Mass1
    Enabled="1"
    Mass="2"
    Description=""
    Color="Black"
    Dwell="3.5 ms"
    HighWarning="0"
    HighAlarm="0"
    LowWarning="0"
    LowAlarm="0"
  />
  <Mass2
    Enabled="1"
    Mass="18"
    Description=""
    Color="Navy"
    Dwell="50 ms"
    HighWarning="0"
    HighAlarm="0"
    LowWarning="0"
    LowAlarm="0"
  />
  <Mass3
    Enabled="1"
    Mass="28"
    Description=""
    Color="Dk. Gray"
    Dwell="50 ms"
    HighWarning="0"
    HighAlarm="0"
    LowWarning="0"
    LowAlarm="0"
```

```
/>
<Mass4
  Enabled="1"
  Mass="32"
  Description=""
  Color="Red"
  Dwell="100 ms"
  HighWarning="0"
  HighAlarm="0"
  LowWarning="0"
  LowAlarm="0"
/>
<Mass5
  Enabled="1"
  Mass="149"
  Description=""
  Color="Fuschia"
  Dwell="200 ms"
  HighWarning="0"
  HighAlarm="0"
  LowWarning="0"
  LowAlarm="0"
/>
<Mass6
  Enabled="1"
  Mass="69"
  Description=""
  Color="Green"
  Dwell="100 ms"
  HighWarning="0"
  HighAlarm="0"
  LowWarning="0"
  LowAlarm="0"
/>
<Mass7
  Enabled="1"
  Mass="38"
  Description=""
  Color="Silver"
  Dwell="3.5 ms"
  HighWarning="0"
  HighAlarm="0"
  LowWarning="0"
  LowAlarm="0"
/>
<Mass8
  Enabled="1"
  Mass="40"
  Description=""
  Color="Pink"
  Dwell="42 ms"
  HighWarning="0"
  HighAlarm="0"
  LowWarning="0"
  LowAlarm="0"
/>
<Mass9
  Enabled="1"
  Mass="44"
  Description=""
  Color="White"
  Dwell="21 ms"
```

```

        HighWarning="0"
        HighAlarm="0"
        LowWarning="0"
        LowAlarm="0"
    />
</MassTableParameters>

<PrintingParameters
    InvertColors="0"
    ShowConfigurationFile="1"
    ShowDescription="1"
    ShowTotalPressure="1"
    ShowPiraniPressure="1"
/>

<GraphParameters>
    <Y-Axis
        FullScale="9.81748e-008"
        Span="1.05925"
    />
</GraphParameters>

<WindowParameters>
    <Frame
        flags="2"
        showCmd="3"
        ptMinPosition.x="0"
        ptMinPosition.y="726"
        ptMaxPosition.x="-4"
        ptMaxPosition.y="-23"
        rcNormalPosition.left="0"
        rcNormalPosition.top="0"
        rcNormalPosition.right="667"
        rcNormalPosition.bottom="438"
    />
    <Setup
        flags="0"
        showCmd="1"
        ptMinPosition.x="-1"
        ptMinPosition.y="-1"
        ptMaxPosition.x="-1"
        ptMaxPosition.y="-1"
        rcNormalPosition.left="958"
        rcNormalPosition.top="50"
        rcNormalPosition.right="1596"
        rcNormalPosition.bottom="1036"
    />
</WindowParameters>

<PlotParameters
    BkColor="Lt Green"
    LineColor="Red"
    ScanColor="Md Blue"
    MouseWheel="0"
/>

</ConfigurationData>

```

When a port to streaming XML data is set, a program such as the one attached (and presumably LabView 7.0) will take-in the data. This xml.exe requires that the port in the communications tab be set to "VacuumPlus".

You may download sxml1.exe from the Extorr website. This is a short program, that runs in its own window and takes streaming data from the Vacuum Plus software. The "service port" must be set to "VacuumPlus" in the Communications tab of the software.