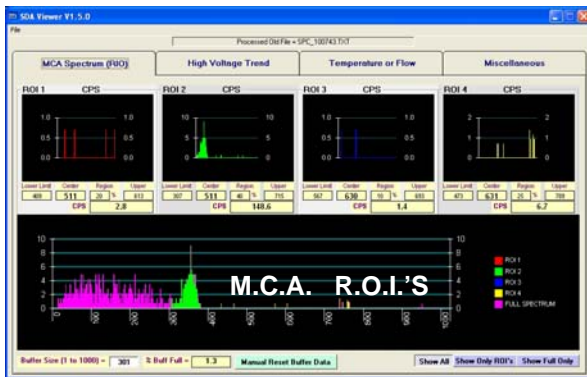


D.O.R.I.S. DISPLAY OF RADIOLOGICAL INFORMATION SOFTWARE

Windows Operating System

TCP/IP Ready



Apantec's Display of Radiological Information Software (**DORIS**) System provides real-time data reporting and control through a user-friendly graphics display with an easy to use operator interface system. Data is collected, analyzed, displayed and recorded in real-time while posting alarms for operator notification. The operators will be able to display and perform the following at either the RM1 series display unit or **DORIS** hardware platform in real time:

- **Current readout activity**
- **Detector information**
- **High/Alert/Fail alarm status**
- **Detector status (fail, normal, etc)**
- **Keypad status & Trend information**
- **Graphic representation of trending data**

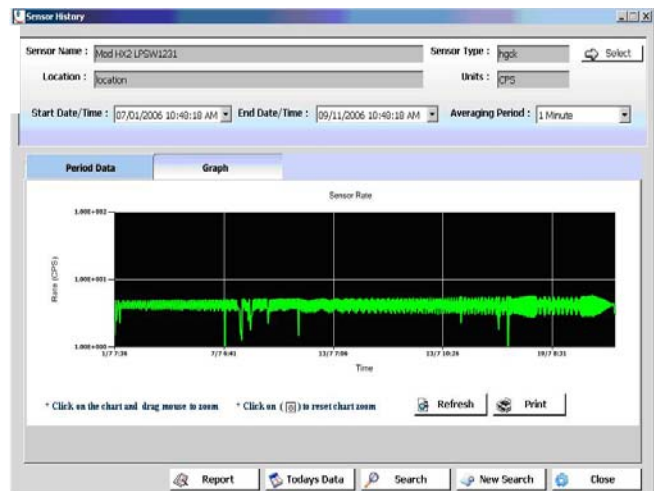


**Display Cabinet
For use in a Nuclear
Power Plant
Application**

DORIS FUNCTIONS

- **Collecting, Converting, Storing, Analyzing, and Integrating data**
- **Detecting, Annunciating, & Storing Alarms**
- **Providing Current, & Historical, Displays**
- **Generating System and Graphic Displays**
- **Providing On-line Data base and Display**
- **Providing On-line Diagnostic Displays**

DORIS SCREENS



Single Channel Trace

Selecting a channel will display the Real Time Single Channel Trace. The Real Time Single Channel Trace display provides the user with three options for data presentation for the selected channel. The first (and default) view of the data is the instantaneous data view in a columnar format. By selecting this tab, the user can view the real time data for the channel as it is received from the monitor. Data is displayed in table type format showing various metrics such as date/time stamp, value, validity, flag, etc. The second view presents the data in a graphical format. As with most **DORIS** functions, the user has extensive control over details of the display.

For example, the user selects the graph type (i.e. line, bar, chart, etc.). Additionally, the graph area can be panned (left, right, up or down) and zoomed (in/out). Other controls for graph color, tick line indication, point display style, line display style, etc., are available on the Graph Configuration tab. One minute average data is shown in the third view of the data. This data is displayed in table type format showing various metrics such as date/time stamp, average value, maximum value, minimum value, validity flag, etc.

Historical Multi-Channel Trace

Historical Multi Channel Trace display is similar to the **Historical Single Channel Trace display**. The display again provides tabular and graphical views of the data for a user selected period and averaging interval. For this display, the difference lies in the Multi Channel versus Single Channel functionality. This Historical Multi Channel Trace display provides the user the ability to view data from a group of channels simultaneously. The data groups (or templates as they are referred to in **DORIS**) are previously defined via a Template Library. The number of templates maintained by **DORIS** as well as the number of channels contained within each template or group is a function of hardware and aesthetic limitations.



Historical Multi-channel Trace

DORIS Tools Menu and Functions

In addition to the more commonly used displays as described above, **DORIS** provides a number of tools and library functions to further maintain and configure **DORIS** for optimal use. A partial list of these tools and functions follows:

- **User authorization & password maintenance**
- **Site Sensor Library**
- **Site RM1 Library**
- **Template Library**
- **Period Library**
- **Color Code Library**
- **Event Library**
- **Measurement Units Library**

Alarm Surveillance Function

The Alarm Surveillance function provides the ability to associate the occurrence of the various alarm events with the corresponding rate information stored in the **DORIS** database. **DORIS** can be used to monitor the entire cyclotron facility including the cyclotron vault and control room, the hot cells and hot cell room, target preparation and recovery rooms, the radiochemistry laboratory and radio-pharmacy, the waste water storage room, all corridors surrounding these areas and the door-ways that exit from the cyclotron complex. In addition, all exhaust stacks serving the cyclotron facility can be continuously monitored. Each computer & monitor is equipped with a battery back-up in the event of a power failure. All of the Digital devices that feed information to the computer can be wired in such a manner that the loss of any single unit will not interrupt the flow of data from the remainder of the installation. These signals, available from the computers or the local display, can be used to activate or de-activate various fan motors, dampers, door interlocks or any other electrically powered device in the facility.

Rate Date/Time	Minimum Rate	Maximum Rate	Average Rate	Alarm Type
7/31/2006 5:14:44 PM	1.21e-6	1.21e-6	1.21e-6	Normal
7/31/2006 5:14:43 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:42 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:36 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:34 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:32 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:30 PM	0.00e+0	0.00e+0	0.00e+0	Fail
7/31/2006 5:14:01 PM	1.20e-6	1.20e-6	1.20e-6	Normal
7/31/2006 5:13:58 PM	1.30e-6	1.30e-6	1.30e-6	Normal
7/31/2006 5:13:56 PM	1.30e-6	1.30e-6	1.30e-6	Normal
7/31/2006 5:13:54 PM	1.30e-6	1.30e-6	1.30e-6	Normal
7/31/2006 5:13:53 PM	1.30e-6	1.30e-6	1.30e-6	Normal
7/31/2006 5:13:51 PM	1.30e-6	1.30e-6	1.30e-6	Normal

Event/Alarm Log

D.O.R.I.S. can be used with all kinds of sensors. Radiation input can be obtained from Air, Liquid, Area, MCA, and other types of monitors and used in various