

# Supervisor Controller Software

WB SPRVSR – Wave Bioreactor Supervisory Control Module

**Hardware:** NEMA 1 Industrial PC running Windows XP with tilt stand and 15" LCD touchscreen interface. RS485/232 and Ethernet ports. 40 GB hard drive; CD-ROM drive.

**Software:** National Instruments Lookout 5.1 SCADA software package with Wave Biotech application software (PCDAQ). This is a well proven and robust software base that offers tremendous flexibility for configuring screens, control strategies and database management.

**Network Topology:** The cluster controller is intended to be used as supervisory control unit handling multiple Wave Bioreactors and associated instrumentation. Up to four (4) local MODBUS networks can be terminated at the cluster controller and operated independently. Two Ethernet ports provide interface to higher-level data acquisition. This could be PCs on the user's plant-wide Ethernet network. Using the Ethernet gateway to the user network allows multiple masters to access the data and control instruments. It can also be used to interface the instruments to the Web.

## Control Functionality Allows:

1. Display of all data and trending. Historical log is maintained.
2. Ability to set up complex control strategies. For example, cascade control of dissolved oxygen by speed. Common control strategies are predefined and can be easily selected by the user without programming.
3. Scheduling of processes. For example, the speed setpoint can be scheduled to change automatically based on a preset condition or at a scheduled time.
4. Global alarming and logging of alarms. Ability to tie into plant-wide alarm systems and paging networks.

*The cluster controller does not control the low level functions, such as adjust gas flow to achieve constant CO<sub>2</sub> concentrations at setpoint. Instead, it adjusts the setpoint of the lower level controllers. Thus, in the event of failure of the cluster controller, the local controller will continue to operate at the last setpoint.*

