

# Nexus® Water Level/ Draft Control



## Water Level Control NXEXP300

### Microprocessor-based expansion module for use with the Nexus series of parallel positioning controls (PPC6000 or NX6100)

Water (drum) level control, sequence draft control and expanded digital inputs can be attained when the Nexus water level/draft control (NXEXP300) and the Fireeye parallel positioning system (PPC6000 or NX6100) are combined.

Basic water level control using a Fireeye CANbus servomotor and suitable valve can be controlled by one, two or three elements of the boiler system: drum level, steam flow and feed water flow.

Sequence draft control is also standard with the module. Utilizing a suitably-ranged differential pressure sensor and Fireeye CANbus servomotor, controlling the boiler outlet damper through pre-purge, light off and run couldn't be easier.

Additional features include an additional seven low voltage and two line voltage safety-rated digital inputs. These inputs provide additional safety interlock annunciation as well as position-proving inputs for outlet dampers, combustion air make-up dampers and/or user defined options.

The optional daughterboard (NSDBWLC) expands the basic water level control to include measurement and control of boiler total dissolved solids (TDS) using industry standard TDS probes<sup>3</sup>. The daughterboard has inputs for the TDS probe as well as an RTD (PT100) type boiler temperature sensor. If no sensor is available, the daughterboard relies on the standard saturated steam table in its memory. The total dissolved solids are controlled by surface and/or bottom blow down. A full-range of options allows flexibility to meet most boiler requirements.



Water level control (NXEXP300) with optional daughterboard (NSDBWLC) installed

### Features

- One, two or three element boiler water level<sup>1</sup> control via 4-20mA inputs from field devices; feed pump VFD and pump sequencing is also included
- Built-in sequence draft control<sup>2</sup> manages the boiler outlet damper through pre-purge, light off and operation reducing standby and operating losses
- Industry standard total dissolved solids (TDS) probe provides the option to control surface blowdown based on TDS levels set by operators
- Flexibility: utilize proven Fireeye CANbus servomotors or industrial 4-20mA current or I/P feed water valves
- Wiring: international voltage setting and simple four wire CANbus interconnections make wiring a snap; safety relay contacts can easily be inserted into the existing control wiring
- Reliable operation with proven hardware and many years of in-field service
- Reconfigured to provide additional features
- Approvals: UL, FM, CE, SIL

<sup>1</sup>Requires optional NXTSD104 display

<sup>2</sup>Required field sensors not supplied by Fireeye

<sup>3</sup>TDS probe by others, consult Fireeye

# Nexus Water Level/Draft Control

## Specifications and Performance

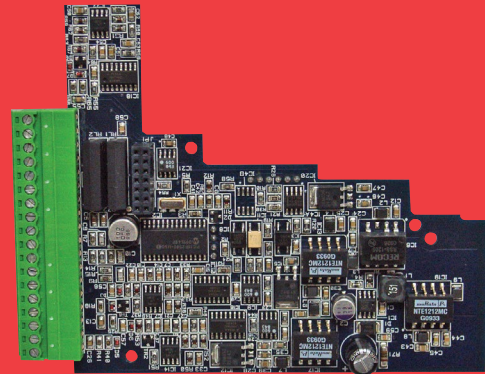
The Fireye Nexus water level control (NXEXP300) is a microprocessor-based expansion module for use with Nexus parallel positioning controls (PPC60001 or integrated NX6100 series). It expands the capability of the parallel positioning system by adding valuable safety-rated digital inputs, sequence draft control, boiler water level control and total dissolved solids (TDS) surface and bottom blowdown control. The small footprint (5 in. L x 8.5 in. W x 3.75 in. H), adjustable voltage (120/230, 50/60 Hz) and simplified wiring provide easy retrofit to existing Fireye systems.

The water level control expands the capability of the parallel positioning system with seven low voltage, safety-rated digital inputs along with two line voltage, safety-rated digital inputs. When configured via available option parameters, these inputs can be used to simply annunciate conditions or shut the boiler down.

Sequence draft control is built into the module to control the boiler output damper. When combined with an appropriate differential pressure sensor, Fireye servomotor or third-party actuator, the outlet damper will modulate and maintain the manufacturer's outlet draft set point. The damper can be controlled with a Fireye CANbus-driven servo motor or a third-party actuator capable of accepting a 4-20mA signal. Analog control requires optional daughterboard (NXDBWLC or NXDBVSD) in main control. Maximum input impedance of actuators is 250 ohms. The boiler outlet damper is controlled during standby, pre-purge, ignition and operation to provide a consistent outlet draft for improved combustion performance and reduced standby losses.

## Other Enhancements

- Oxygen trim - 20+ years proven oxygen probe technology
- VFD - Daughterboard for PPC6000/NX61000 provides two VFD channels plus modbus RTU



## Water Level Daughterboard

The optional expansion daughterboard (NXDBWLC) enhances the capability of the Nexus system by optimizing boiler water quality and level. The results are higher-quality steam and reduced boiler water side scaling.

The daughterboard includes an input from the measurement of total dissolved solids (TDS) which in turn controls a surface, bottom or combination of blowdown valves. A fully programmable operating scheme allows each site to be custom configured based on water and operating conditions. Provisions are made for connecting a RTD temperature sensor (PT100) or the system can use a built-in steam table for estimating water temperature compensation. The daughterboard features one analog output for controlling the boiler feed water valve or the sequence draft damper. The maximum input impedance of the actuators must not exceed 250 ohms.

For more information, please [contact](#) your local Fireye Distributor.

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