

# INTEMPOS

Intelligent Temperature  
Controller

Bruce Technologies Inc.



The **INTEMPOS™** Intelligent Temperature Controller is specifically designed to meet the critical thermal control requirements of today's horizontal diffusion and VCVD furnaces. It includes many enhanced features which improve overall temperature control, protects valuable wafer loads from unexpected thermocouple failures and significantly increases wafer throughput with its advanced rule-based profile thermocouple control capabilities. By preventing the loss of costly product wafers from furnace aborts due to thermocouple failures, **INTEMPOS™** can help increase wafer throughput increasing revenue for your fab.

#### Failure Protection Modes

The **INTEMPOS™** incorporates numerous failure protection modes for spike, profile and over-temperature thermocouples. The system has the capability to sense an open, shorted, misplaced or damaged thermocouple. It then automatically switches to an alternative thermocouple for control, thereby protecting the wafer load during the process cycle, and alerts the operator to a potential thermocouple problem.

#### KEY FEATURES

- Advanced rule-based control algorithms
- Improved data acquisition technique
- Increased scan rates
- Thermocouple failure protection capability
- Improved furnace temperature recovery
- Typical flat zone control of better than +/-0.25C
- Enhanced step/ramp control
- No autoprofiling or spike thermocouple setpoints required
- Eliminates the need for multiple temperature setpoints
- No periodic calibration required
- Enhanced diagnostic program
- Incorporates a 12-channel temperature controller with 6-channel over-temperature circuitry into one compact module

#### INTEMPOS™ Retrofit Kit



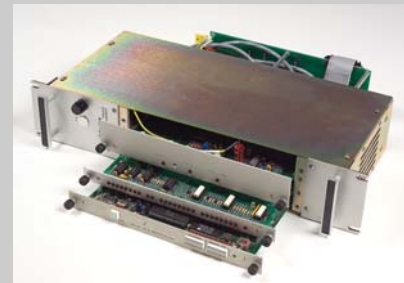
Other Bruce Controllers to consider...



7355 DDC  
System Controller



5600 Model  
Torch Controller



7900 ATM Gas Controller  
81xx CVD Gas Controller

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## EASE OF OPERATION AND MAINTENANCE

Ease of maintenance was a primary goal when designing **INTEMP $\sigma$ S™**. **INTEMP $\sigma$ S™** provides simplified operation by eliminating the need for autoprofiling as well as multiple temperature groups for various process conditions. By using highly reliable solid-state components that meet strict design standards, no periodic calibration is required. In addition, a diagnostic port is available for access to:

- Temperature set-up options
- Over-temperature read-out and trip point adjustments
- Read-out of individual PID power contributions
- Thermocouple failure protection mode status
- Temperature module alarm status

The **INTEMP $\sigma$ S™** module is a standard product on all BDF-41 & BDF-200 horizontal furnaces. **INTEMP $\sigma$ S™** modules can be easily retrofitted to older horizontal furnaces using the BTI 7355 DDCs. For more information, contact Bruce Technologies Inc



## TEMPERATURE CONTROLLER MODULE

**INTEMP $\sigma$ S™** integrates a 12-channel temperature controller with 6-channel over-temperature circuitry into one compact unit. BTI engineers use state-of-the-art components, improved data acquisition techniques, advanced rule-based control algorithms, and increased scan rates to achieve typical control accuracy better than  $\pm 0.25$  C. These enhancements ultimately result in increased wafer throughput and improved process uniformity based on faster furnace recovery time, enhanced step/ramp control, and an extremely uniform flat zone.

## KEY BENEFITS

- Surpasses critical thermal control requirements for today's horizontal diffusion and VCVD furnaces
- Protects against loss of product wafers due to thermocouple failures
- Increases wafer throughput
- Improves process uniformity and run-to-run repeatability
- Improves ease of operation and maintenance
- Easily retrofits to existing 7355 DDC systems