



## Bulk Temperature Measurements

A systems integrator had to solve a problem. Their customer—a grain elevator company - wanted to install wear sensors on conveyors and bearings to sense potential hot spots. Several hundred thermocouples would be involved. Most conventional I/O would be outside of the budget for the project.

The Solution—a Western Reserve Controls Bulk Temperature

Measuring System costing less than \$50 per point. WRC's 1781-STB-TC provides bulk thermocouple signal conditioning and multiplexing. The 1781-STB-TC works with either WRC's SmartMux™ for use on Rockwell Automation's Remote I/O Link or with WRC's SmartMux-Plus™ for use on DeviceNet—based systems. In either case, simple, low-cost, reliable operation is assured.

1781-STB-TC provides 15 thermocouple inputs plus a cold junction compensation measurement. Filtering, signal conditioning, amplification, and multiplexing are provided on-board. The SmartMux or SmartMux-Plus provide the network interface, analog to digital conversion, and control the multiplexing. SmartMux-Plus can support four 1781-STB-TC boards while SmartMux supports two.

**Systems Integrator:** Experienced Allen-Bradley organization

**Location:** Southern USA

**Service Area:** Southern USA

**Application:** Provide mechanism to read large numbers of remotely located thermocouples economically.

**Solution:** WRC's bulk thermocouple card connected to one of WRC's SmartMux I/O adapters for Remote I/O link (Blue Hose) or DeviceNet.

**Special Requirements:** Provision for cold junction compensation and ability to work with either grounded or ungrounded thermocouples.

### Benefits provided:

- Choice of either Remote I/O Link or DeviceNet
- Up to 60 thermocouples per remote node on DeviceNet, 30 on Remote I/O Link
- Add 15 thermocouples at a time
- Cold Junction Compensation provided
- Works with either grounded or ungrounded thermocouples
- $\pm 30$  Volt Input Over-Voltage Protection
- $\pm 0.05\%$  Gain Accuracy
- $\pm 1^\circ$  C CJC Accuracy
- 100 dB Common Mode Rejection
- 8 Hz Low Pass Filter
- 1 G $\Omega$  Input Impedance
- 12-bit resolution over either DeviceNet or Remote I/O Link

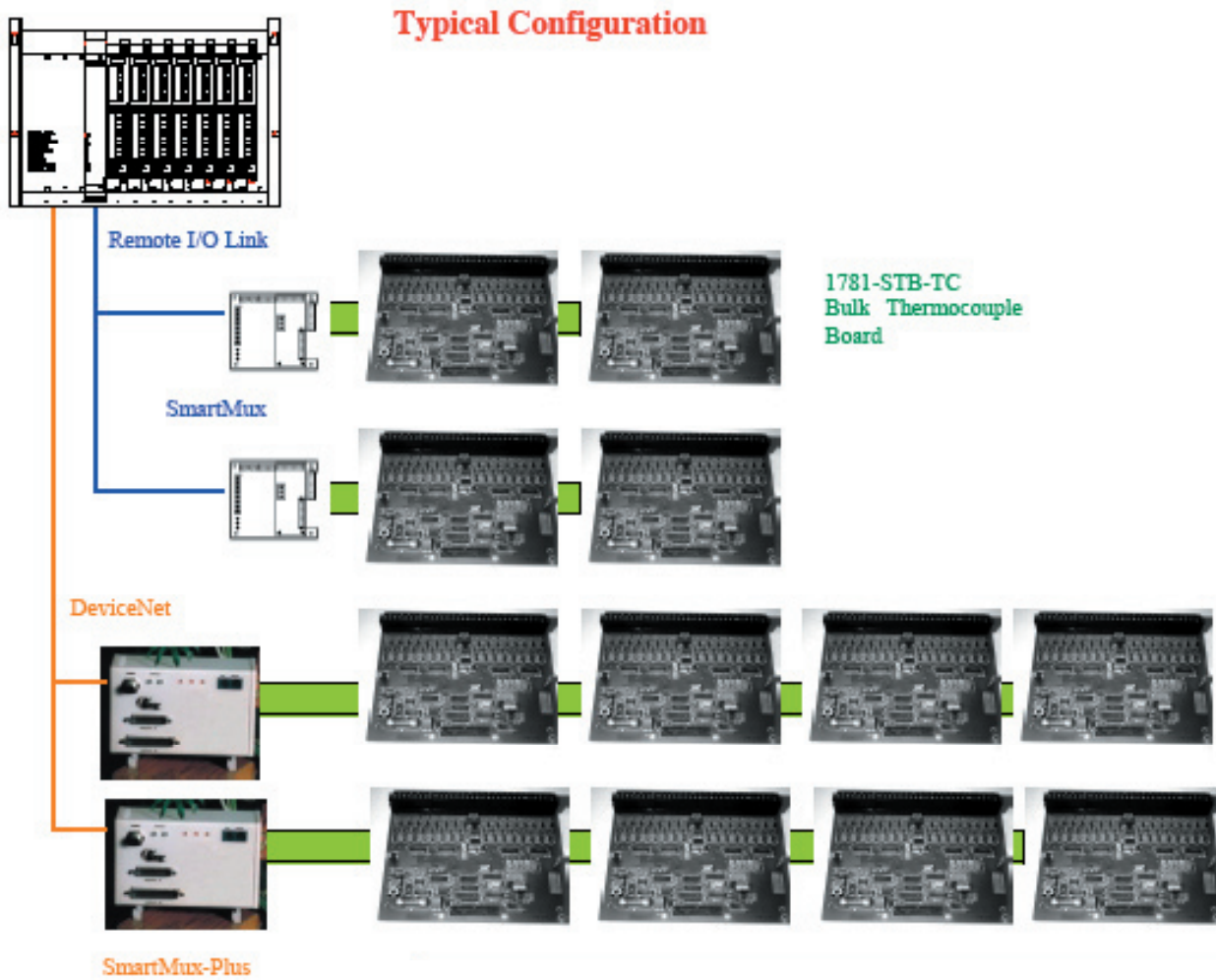


WRC is one of the original members of ODVA  
Your source for Blue-Collar Electronics.



WRC is a Rockwell Automation Encompass Partner for  
Gateway, Bus Extender and signal conditioning products.

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**System Requirements:**

- DeviceNet—specify SmartMux-Plus, WRC1-JDA/24TC—will support up to 60 thermocouples per node.
- RIO—Specify SmartMux, 1781-JAA will support up to 30 thermocouples per node.
- Specify 1781-STB-TC for each 15 thermocouples. A 3-foot cable to connect is included.
- Specify a 1781-PS1 power supply for each physical location, i.e. one required per panel
- Note: Only one thermocouple type allowed per 1781-STB-TC
- Note: Isolation between thermocouples is not provided.