

NovaTech Substation Automation Application Note

Customer and Project Scope:

Central Hudson, Poughkeepsie, NY. Two initial automated substations each with PLC-based RTU, discrete I/O through the PLC, analogs from SEL relays with HMI for indication only. Two newer automated substations, one in service, the other planned for Q1 2004. Newer designs use PLCs in hot standby for protection and control and dual HMIs for all local indication and all control (no local control switches). The latest automation system is summarized in this note

Dates of Implementation:

From late '90s to the present; on-going activity

Type of Substation Automation Project:

- PLC-based Protection and Control (trips and all control go through PLC)
- Smart RTU connected to substation IEDs
- Substation HMI in place on control switches and displays
- High Resolution SER

NovaTech Hardware, Software and Service Products:

- NovaView Plus Substation HMI
- NovaMux (BM85 Bridge Mux) with protocols: DNP3.0, Modbus Plus
- Monaghan SER System in Modicon PLC with SER PLC loadable software function
- Systems Engineering on initial system
- Training

Responsibilities of NovaTech, Other Vendors and Utility:

NovaTech worked in conjunction with Central Hudson to engineer the first system, including interface to DNP3.0 SCADA master, SEL relays and configuration of HMI. NovaTech provided training on NovaView Plus, DNP3.0 and PLC loadables to make Central Hudson self-sufficient for future integration. Central Hudson engineered subsequent systems while NovaTech provided NovaView Plus, BM85 Bridge Mux, protocol products and software loadables.

Substation Local Area Network(s):

Modbus Plus

SCADA Network and Protocol:

DNP3.0

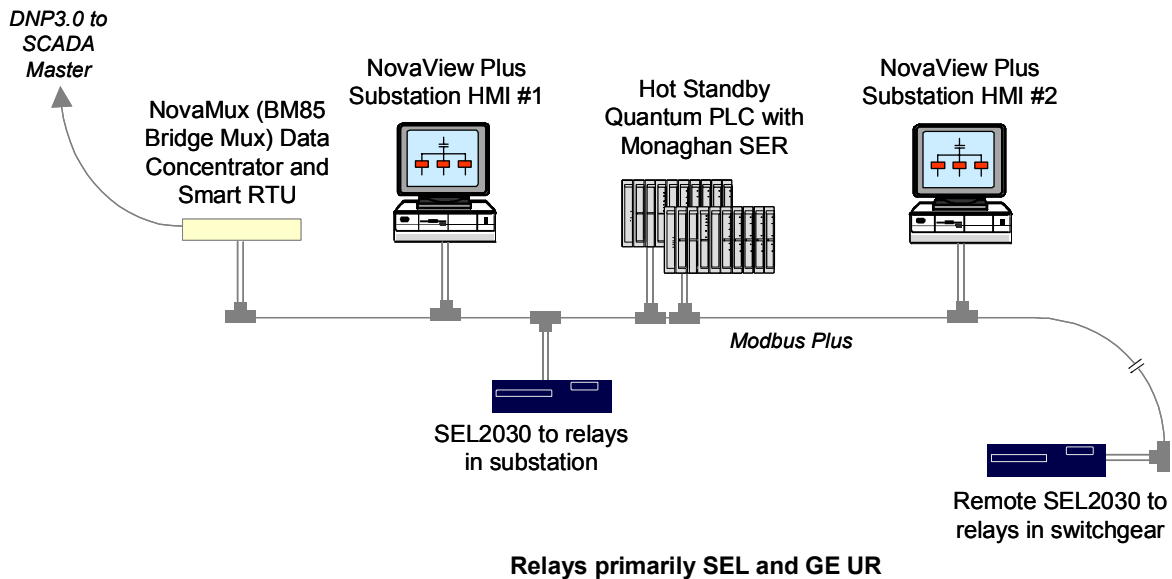
IED Interface Details:

IED (Connected to NovaMux)	Number	Interface Protocol	Data Retrieved	Control through IED?	Other
Modicon PLC with Monaghan SER	1	Modbus Plus to PLCs	Breaker status, 1mS SER time stamps	Yes, breaker trip/close	
SEL2030	2	Modbus Plus to 2030	SCADA analogs and alarms	No	2030 connected to SEL and GE relays

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- Analog and discrete data, including Sequence of Events displayed on HMI and on EMS
- Breaker Trip/Close through PLC. Select-Before-Operate in PLC loadable
- *Modeling* of selection switches in HMI including: Auto/Manual, Reclose Block; Supervisor Cut-Off, Enable/Disable Under Frequency, etc. *Logic* in PLC.
- Reclose permissives and reclose initiate from PLC. Reclose timing in relays.
- **Other HMI features:**
 - System and Station One-Line Diagrams
 - Alarm/Event Reporting and Logging
 - Multiple Drill-Down Levels
 - Dial-up Remote HMI Access
 - Intelligent Alarm Management
 - Visual and Audible Alarms
 - On-line and Historical Trending

Diagram of Latest Central Hudson Substation Automation System



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