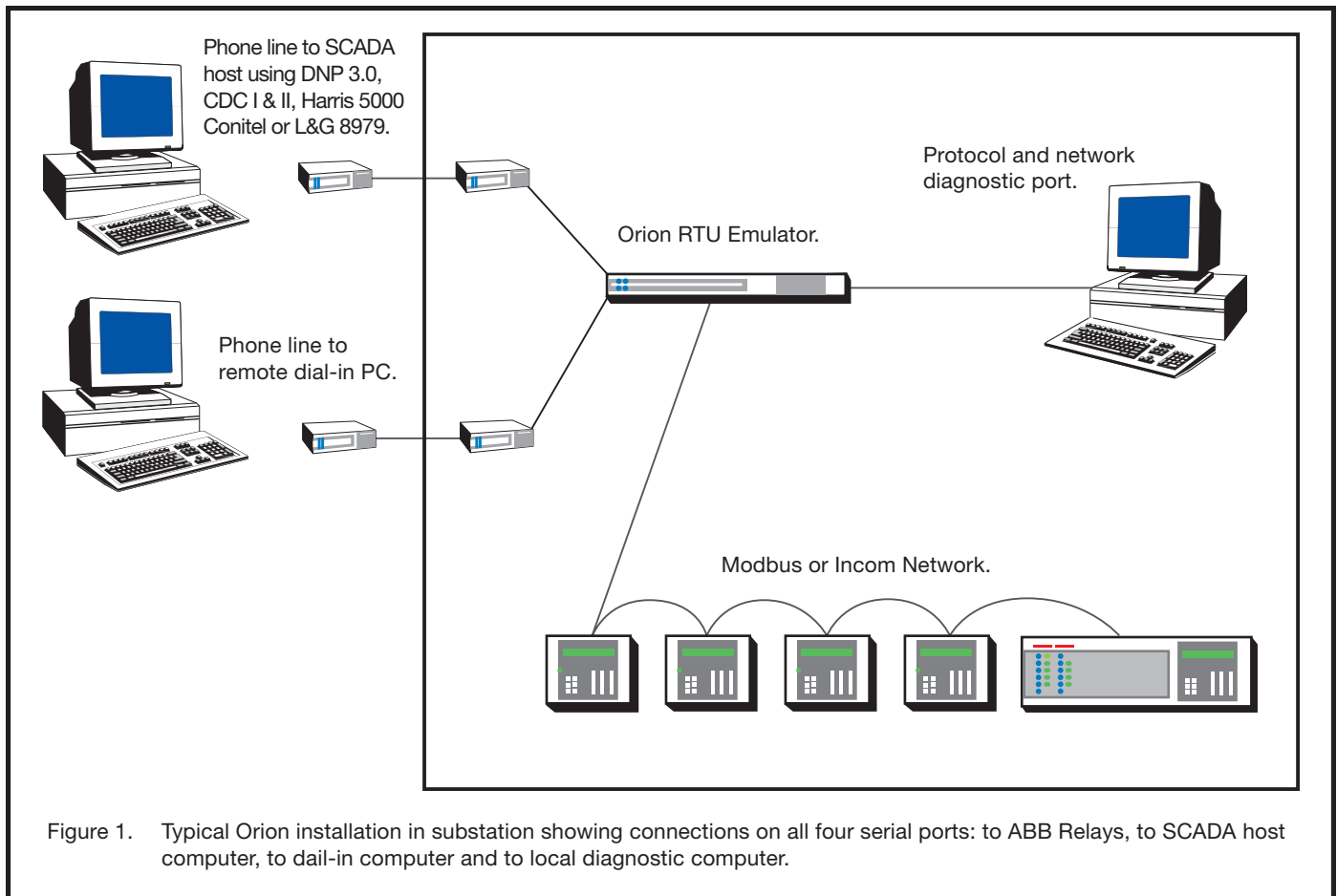


Effective: August, 1998
New Information

Orion RTU Emulator



WHAT IS ORION?

Orion is a packaged RTU emulation solution for interfacing ABB relays into a SCADA system. It is specifically engineered to reduce all costs associated with the implementation of a small RTU into a substation.

Orion is jointly sold and supported by NovaTech, Lenexa, KS and ABB Power T&D Company, Power Automation and Protection Division, Allentown, PA and Coral Springs, FL.

Orion is five things in one. It is:

- 1) A translating device to talk to the SCADA host in its native protocol.
- 2) An intelligent device that looks and acts like an RTU.
- 3) A database that maintains real-time analog and discrete information required by SCADA.
- 4) A device to communicate to ABB Relays using Modbus or Incom protocol.
- 5) A communication tool to provide dial-in access to substation relays.

Orion Benefits

Reduced "RTU" hardware cost. The RTU is minimized to a communications interface with emulation software. The I/O on ABB relays becomes the RTU I/O.

Reduced configuration and engineering costs. MSOC, 2000R and other ABB relays are preconfigured into the Orion data base. Orion knows what to look for in the relays and knows how to respond to a SCADA host.

Reduced on-site debugging costs. Protocol and network diagnostic tools help find and fix communication problems fast.



PHYSICAL FEATURES

Orion is available in two rugged physical configurations; one for 19" rack mounting and one for surface mounting. Orion is designed to operate in tough substation environments and meets IEEE surge withstand requirements and -40°C to 85°C temperature extremes.

Orion has four serial communications ports. These are:

- 1) An RS232 or RS485 port (selectable) to connect to ABB relays using Modbus or Incom protocol. The Orion system is designed to connect to eight relays or less to ensure sufficiently fast response to SCADA requests. Two or more Orion systems can be connected together for larger installations.
- 2) A host SCADA port that will accommodate either bit or byte oriented protocols. DNP 3.0, Conitel, CDC I & II, Harris 5000 and L&G 8979 are currently operating on Orion. Others can be accommodated upon request.
- 3) A dial-in port for accessing ABB relay settings, analog and discrete data remotely, using a PC.
- 4) A diagnostic port to analyze the SCADA communication as well as the communication to the relays.

How is Orion Used?

Orion is pre-engineered and provided ready to connect to SCADA host devices and to ABB relays. Once an RS485 or RS232 connection is wired between the relays and Orion, configuration, using emulation software on a PC, can begin. During configuration, the relay network addresses are defined, various SCADA communication and relay network parameters are defined, and that's it. Orion knows where to look for the data in the relay and how to format and present it to the SCADA host.

ORION OPTIONS

Orion can be provided three ways:

- 1) As an independent automation device, ready for packaging and connection to relays.
- 2) Packaged in an enclosure with modems, ready for connection to relays.
- 3) Part of a complete ABB or NovaTech automation system with packaged relays.

ORION SPECIFICATIONS

SCADA Port

DNP 3.0, Harris 5000, CDC Types I and II, Conitel, L&G 8979. Designed to interface with Bell 202 type modem. Baud rates supported are 600, 1200 and 1800.

ABB Relay Port

RS-232 or RS-485, selectable on-board. Baud rate, data bits, parity and stop bits are all configurable. Supports up to 8 multi-drop devices.

RS-485 Driver Specifications

Distance	4,000' up to 19.2 K Baud.
Input impedance	Typically 20K ohms to ground. 0.6 unit load. 32 driver/receiver pairs for full duplex operation. ESD protection up to 2 kV using the human body model.

Diagnostic Port

RS-232 to personal computer running terminal emulation program.
Fixed baud rate, 9600, N, 8, 1.

Addresses

1 to 255 using DIP switch.

Diagnostic Display

LEDs for TX, RX, RTS.

Power

Utility Grade Universal Supply 24 VDC to 125 VDC, 125 VAC, 10 watts.

Environmental

-40°C to 85°C.

Standards

IEEE/ANSI C37.90 surge withstand.

Physical Size

2.75" x 5.57" x 9.0" desk top mount, or a 1U rack panel mount.

Options

Bell 202 SCADA Modem.
Dial-up modem.
NEMA 12 or 4 enclosure.



ORION ORDER SELECTIONS SHEET													
Catalog Digit #	1	2	3	4	5	6	7	8	-	9	10	11	12
Orion RTU Emulator Catalog #	2	4	5	-	-	-	-	-	-	-	-	-	-
CONFIGURATION	(DIGIT #4)												
[T] = Table Top Case (Std.)													
[R] = 19" Rack Mount Unit													
ENCLOSURE	(DIGIT #5)												
[0] = None (Std.)													
[1] = Electrical 19" Rack													
[2] = NEMA 12													
[3] = NEMA 4													
[4] = NEMA 4X													
[5] = Other/Special(Specify)													
CONTROL VOLTAGE	(DIGIT #6)												
[1] = Universal P/S (24-240VDC, 120VAC) (Std.)													
DIAL-UP MODEM	(DIGIT #7)												
[0] = None (Std.)													
[1] = Auto-Answer													
SCADA MODEM	(DIGIT #8)												
[0] = None (Std.)													
[1] = Bell 202T													
PROTOCOLS (ONE SCADA PROTOCOL AND ONE NETWORK PROTOCOL STD.)													
SCADA PROTOCOL	(DIGIT #9)												
[1] = DNP3.0													
[3] = Landis and Gyr 8979													
[4] = Modbus													
[5] = Conitel 300													
[6] = Conitel 2020													
[7] = CDC Type I													
[8] = CDC Type II													
[9] = Harris 5000													
[A] = Other(Specify)													
NETWORK PROTOCOL	(DIGIT #10)												
[0] = Modbus													
[4] = Incom (10-byte)													
[A] = Other (Specify)													
NETWORK CABLE*	(DIGIT #11)												
[0] = None (*)													
[1] = Cable													
HEATER	(DIGIT #12)												
[0] = None (Std.)													
[1] = Heater													

Example: A #245T0100-1000 is the table mount unit, no enclosure, no modems, DNP and Modbus, no network cable, no heater.

Example: A #245R1111-3410 is the 19" rack mount unit in a 19" rack, autoanswer and Bell 202 modems, L&G 8979, Incom, network cable and no heater.

*Note: Custom cable for each application. A cable up to 50' with connectors can be provided with each Orion order. Please include sketch with number of nodes and feet between each node.

ABB Power T&D Company Inc.

Power Automation and Protection Division
4300 Coral Ridge Drive
Coral Springs, FL 33065
800 523-2620

NovaTech, L.L.C.

13604 West 107TH Street
Lenexa, KS 66215
913 451-1880 Voice
913 451-2845 Fax

ABB Power T&D Company Inc.

Power Automation and Protection Division
7036 Snowdrift Road, Suite 2
Allentown, PA 18106
800 634-6005