

PORT SERVERS – Item No.

Special Provision No. 683S24

September 2007

1. SCOPE

This Special Provision covers the requirements for the installation and testing of port servers.

2. REFERENCES

This Special Provision refers to the following standards, specifications or publications:

Electronic Industries Alliance / Telecommunications Industry Association:

EIA/TIA-232-E Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Binary Data Interchange

TIA/ EIA 422-B Electrical Characteristics of Balanced Voltage Digital Interface Circuits

EIA 485 Standard for Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems

Institute of Electrical and Electronics Engineers:

IEEE 802.3-2005 IEEE Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications

3. DEFINITIONS

For the purpose of this Special Provision, the following definition applies:

Port Server: means a device which enables communications to legacy asynchronous serial communication devices over an Ethernet network.

4. DESIGN AND SUBMISSION REQUIREMENTS

4.1 Submission Requirements

The Contractor shall supply the specification sheets for the port servers to the Contract Administrator for review prior to ordering.

5. MATERIALS

5.1 Functional Requirements

5.1.1 The port server shall interface to the Ethernet network through a 10BaseT or 100BaseTX RJ-45 Ethernet connection. The port server shall support auto negotiation on 10/100BaseTX ports.

- 5.1.2 The port server's Ethernet features implemented shall support relevant IEEE 802.3 protocols.
- 5.1.3 The port server shall support RS-232, RS-422, and RS-485 serial communication protocols.
- 5.1.4 The port server shall have a packet error rate (Ethernet interface) and bit error rate (serial interface) of at least 10^{-6} when transmitting serial data at 9600 baud.
- 5.1.5 The port server shall distribute data out of the serial port from the Ethernet port for IP flows addressed to the device, and as received and distilled from a TCP/IP or UDP/IP Ethernet packet. The serial data shall be presented in accordance with the data rate, number of data bits, parity, and number of stop bits as the device profile has been previously configured for.
- 5.1.6 The port server shall buffer and packetize serial data arriving on the serial port of the device, and transmit it to the TCP/IP or UDP/IP Ethernet packet destination that the device has been configured to reply to, via the Ethernet port.
- 5.1.7 The port server shall be configurable through an Ethernet connection, and optionally via a serial connection. At a minimum, configuration shall be achieved through a web browser or telnet terminal session.
- 5.1.8 The port server shall be capable of operating in a point-to-point manner with another port server connected on the same Ethernet network.
- 5.1.9 The port server shall be capable of operating in a point-to-multipoint manner with multiple port servers connected on the same Ethernet network. The device shall be capable of processing incoming data from the same remote port servers. As a minimum, the point-to-multipoint mode shall support 2 to 16 port server IP addresses.
- 5.1.10 The port server shall continually diagnose and provide external visible indication of, but not limited to, power status and link integrity and activity on the Ethernet network.
- 5.1.11 The port server shall interface to a serial communication device via an appropriately pinned common D-shell connector.
- 5.1.12 The port server shall utilize socket services to distribute the data without the need to load any software in any communicating device. Software may be loaded on a field maintenance computer to allow initial configuration of the devices. This software and applicable license shall be included in the tender price for the item.
- 5.1.13 The port server shall support "none", "hardware", and "software" flow control formats.
- 5.1.14 The port server shall support, at a minimum, data rates between 2400 and 19200 bits per second.

5.2 Environmental

The port server shall be fully operational in external ambient temperatures ranging from -10°C to $+50^{\circ}\text{C}$ and relative humidity 10-95% non-condensing.

5.3 Electrical

The port server shall be externally powered using input voltage of 115 VAC $\pm 15\%$, 60 Hz $\pm 5\%$.

6. EQUIPMENT – Not Used

7. CONSTRUCTION

7.1 Installation and Configuration

- 7.1.1 The Contractor shall install all port servers as per the manufacturer recommended installation procedure.
- 7.1.2 The port server shall be installed in locations and/or cabinets identified in the Contract package.
- 7.1.3 The Contractor shall configure an IP address for each device, based on the information provided by the Contract Administrator.
- 7.1.4 The Contractor shall set-up and configure the device based on its point-to-point or point-to-multipoint arrangement.
- 7.1.5 If an external power supply component is required for the operation of the switch, means shall be provided to securely fasten the connector to prevent it from becoming accidentally dislodged.
- 7.1.6 The Contractor shall connect the port server’s power supply cord to the output receptacles on the uninterruptible power supplies (UPS) in the controller cabinets.
- 7.1.7 The Contractor shall supply and connect all interconnecting electrical cables to the port server as indicated on the drawings.
- 7.1.8 The Contractor shall neatly train and organize all cables.

7.2 Quality Control

The Contractor is responsible for all testing and documentation required to establish approval and acceptance of installation and operation of this equipment. The framework of the approval process shall be as specified elsewhere in the Contract Documents.

The following table details the clauses within this Special Provision, which are to be validated through the PIT, POP, and SIT processes as indicated:

CLAUSE	PIT	POP	SIT
5.1.1	√	√	√
5.1.3	√	√	
5.1.4	√		
5.1.5	√	√	
5.1.6	√	√	√
5.1.7	√	√	
5.1.8			√

CLAUSE	PIT	POP	SIT
5.1.9			√
5.1.10	√	√	
5.1.14	√		
5.2	√ ¹		

Testing Footnotes:

¹ Environmental testing certificate verifying the stated environmental requirements shall be provided as a condition of equipment acceptance.

8. QUALITY ASSURANCE – Not Used

9. MEASUREMENT FOR PAYMENT

Measurement of the number of port servers is by Plan Quantity as may be revised by Adjusted Plan Quantity.

The unit of measurement is each.

10. BASIS OF PAYMENT

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment and Materials required to do the work including the production of all drawings, text and test results, except SIT which is paid for under a separate item.