ITEM 11680.831 M - SERIAL PORT SWITCH

DESCRIPTION:

This work shall consist of furnishing and installing Serial Port Switchs (SPS) at the locations shown on the plans and in accordance with the Contract Documents and as ordered by the Engineer. The SPSs are used to connect multiple Vehicle Classification Detectors communicating through individual RS-232 data ports (remote ports) to a Type 170E Controller through a single RS-232 data port (master port).

MATERIALS:

All material furnished, fabricated or installed shall be new, corrosion resistant and in strict accordance with the Contract Documents and the Special Provisions.

The SPS shall be suitable for shelf mounting in equipment cabinets in the field. The cabinets are described under other contract items.

Functional Requirements

The SPS shall operate in a point to point mode. The Type 170E Controller will initiate a transmission by polling the SPS through the SPS master port. The polling message will include a header with the address of the port to which the message is addressed. The SPS shall decode the address of the remote port to which the message is addressed and activate that port. The SPS shall strip the port identifier from the message prior to transmitting the message to the remote port. The SPS shall keep the remote port connected to the master until another port is addressed.

To insure compatibility and interchangeability with equipment furnished under previous projects, the Serial Port Switch shall be the following:

DCB AS-08 Access Switch
manufactured by
Data Comm for Business
807 Pioneer
Champaign, IL 61820
or equal as approved by the Engineer.

Specific Requirements

Data

a. Number of ports: One master port and eight remote ports.
b. Data Interface: RS-232C.
c. Data Type: Asynchronous, protocol and code transparent.
d. Data Connectors: All ports RJ-45.
e. Data Rate: Up to 19.2 kbps.
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Memory
Configuration data shall be stored in non-volatile memory

Mechanical
The SPS shall be a stand-alone unit suitable for shelf mounting.

- Dimensions (maximum): 265 mm (W) x 250 mm (L) x 65 mm (H).
- Weight (maximum): 2 kg.

Environmental
- Temperature (operating): 0°C to +55°C.
  The unit shall not be damaged when operated over the temperature range of -20°C to +70°C.
- Humidity: 0 to 95% non-condensing.

Electrical
- Power: 115 ±15 VAC, current drain shall not exceed 400 mA.
  The units may operate at an AC or DC voltage lower than 120VAC. If the equipment operates at a voltage other than 120VAC, the Contractor shall be responsible for providing and installing the required power supply as part of this bid item.
- Transient Suppression: The equipment shall meet the requirements of Section 2.1.6 “Transients, Power Service” of NEMA Standard TS-1.

Indicators:
As a minimum the following LED indicators shall be provided:

- Power On.
- For each port: transmit and receive.

Test Software
The Contractor shall provide software to emulate the addressing of each of the remote SPS ports by the Type 170E Controller. The software shall run on a notebook computer running under the Windows 2000 operating system. Three copies of the software shall be furnished on floppy disks.

CONSTRUCTION DETAILS:
The Contractor shall install the SPS in the equipment cabinets designated on the plans and connect the data and power cables to the SPS.
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Warranties and Guarantees

The Contractor shall provide warranties and guarantees to the State of New York Department of Transportation in accordance with Article 104-08 of the Standard Specifications.

Documentation

Manuals

The Contractor shall furnish ten (10) sets of maintenance and operations manuals. The maintenance manuals shall contain maintenance and trouble shooting charts and procedures to permit fault isolation to the lowest replaceable unit level. The Contractor shall assemble the individual manuals and trouble shooting and fault isolation procedures into loose leaf binder(s). The equipment manuals shall as a minimum contain the following:

a. Complete and accurate schematic diagrams.
b. Complete installation and operation procedures.
c. Complete performance specifications (functional, electrical, mechanical and environmental) of the unit.
d. Complete list of replaceable parts including names of vendors for parts not identified by universal part numbers such as JEDEC/ RETMA or EIA.
e. Complete maintenance and troubleshooting procedures.

The Contractor shall submit to the Engineer six (6) copies of review manuals for approval prior to the final submission. The review copies shall be submitted prior to the start of the system acceptance test. The final copy shall be submitted within 30 calendar days of receipt of review comments from the Engineer. Any changes resulting from the testing of the units shall be incorporated into the final submission.

Testing

Operational Stand-Alone Test

After installation of the equipment and prior to integration of the equipment into the system, the Contractor shall perform an operational stand-alone test in the field for each of the units. The test shall demonstrate as a minimum the ability of the SPS to communicate on each of its output ports. A notebook computer running the test software shall be used to emulate the Type 170E controller.

If the standalone test fails, the equipment shall be repaired and the test shall be rerun for that site. If a component has been modified as a result of a failure, that component shall be replaced in all like units and the test shall be rerun for each unit.

METHOD OF MEASUREMENT:

The Serial Port Switch will be measured for payment as each unit installed, made fully operational and tested.
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BASIS OF PAYMENT:

The unit price bid for each Serial Port Switch shall include the cost of furnishing all labor, materials and equipment necessary to complete the work.

Progress payment will be made as follows:

   Fifty percent of the bid price for each item will be paid when the Serial Port Switch is installed and having passed the Operational Stand-alone Test. Twenty percent of the bid price for each item will be paid upon successful completion of the Local Detector Processing Group Verification Test for the processor cabinet to which it reports. Twenty percent of the bid price for each item will be paid upon successful completion of the Remote Detector Processing Group Verification Test for the group to which it reports. Ten percent of the bid price will be paid upon system acceptance.