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|  | FDOT Traffic Engineering Research Laboratory (TERL)  Device Server Compliance Matrix | By signing this form, the applicant declares that he/she has read and understands the provisions of Sections 684 and 996 of the FDOT *Standard Specifications for Road and Bridge Construction* and all implemented modifications. The requirements listed on this matrix are derived from Sections 684 and 996, and are the basis for determining a product’s compliance and its acceptability for use on Florida’s roads. |  |

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| --- | --- | --- | --- |
| Date: | Click here to enter a date. | Applicant’s  Name (print): |  |
| Manufacturer: |  |  |  |
| Item, Model No.: |  | Signature: |  |

|  |  | **\*\* Greyed out rows in table below are for TERL use only \*\*** |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID No** | **Section** | **Requirement** | **Item Comply? (Yes/No/NA)** | **Comments (Applicant must provide information as indicated)** | **TERL Evaluation Method** |
| 1 | 996-1.1 | Equipment is permanently marked with manufacturer name or trademark, part number, date of manufacture and serial number. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 1) |  |  | Init.: |
| 2 | 996-3.4.1 | Device server allows connection of serial devices with Electronic Industries Alliance (EIA)-232, EIA-422, and EIA-485 connections to an Ethernet network. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review,  Physical Inspection and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Steps 1, 6), DS003 (Steps 1, 3) |  |  | Init.: |
| 3 |  | Device server provides a TCP/IP interface to one or more field devices using EIA-232/422/485 standard connections. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS003 (Step 1) |  |  | Init.: |
| 4 |  | Device server supports TCP/IP,UDP/IP, Dynamic Host Configuration Protocol (DHCP), Address Resolution Protocol (ARP), Internet Control Message Protocol (ICMP), Simple Network Management Protocol (SNMP), Hypertext Transfer Protocol (HTTP), and telnet. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS003 (Step 2) |  |  | Init.: |
| 5 |  | Device server provides 99.999 percent error-free operation. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): DS001 (Step 2) |  |  | Init.: |
| 6 |  | Device server provides EIA-compatible Ethernet data communication by way of a Category 5E copper or fiber optic transmission medium. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 2) |  |  | Init.: |
| 7 |  | Device server is resistant to all electromagnetic interference. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): DS001 (Step 3) |  |  | Init.: |
| 8 |  | Data security complies with Version 2 of the Secure Shell Protocol (SSHv2), or the NIST requirements as defined in the Federal Information Processing Standard (FIPS) Publication (PUB)-197 for the Advanced Encryption Standard (AES). |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 4) |  |  | Init.: |
| 9 |  | Device server has a minimum mean time between (MTBF) failures of 10 years or 87,600 hours. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): DS001 (Step 5) |  |  | Init.: |
| 10 | 996-3.4.2 | Device server provides a minimum of one serial data interface and connector that conforms to EIA-232/422/485 standards. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 3) |  |  | Init.: |
| 11 |  | Device server serial port(s) supports 2-wire and 4-wire EIA-485 connections. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 6), DS003 (Step 3) |  |  | Init.: |
| 12 |  | Device server serial port(s) support data rates up to 230 kbps; error detection procedures utilizing parity bits (i.e., none, even, and odd); and stop bits (1 or 2). |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS003 (Step 4) |  |  | Init.: |
| 13 |  | Device server provides flow control (request to send [RTS]/clear to send [CTS] and transmit on/transmit off [XON/XOFF]) as well as allow control of the Data Terminal Ready (DTR), Data Carrier Detect (DCD), Data Set Ready (DSR), CTS, and RTS signals. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS003 (Step 5) |  |  | Init.: |
| 14 |  | Device server supports RTS toggle for half-duplex emulation. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 7) |  |  | Init.: |
| 15 | 996-3.4.3 | Device server includes a minimum of one Ethernet port, that provides a 10/100 Base TX or a 10/100 Base FX connection as specified in the Plans. |  | *Applicant may provide comments in this field.* | Physical Inspection and Functional Inspection |
| TERL Test Cases (Steps): DS002 (Step 4), DS003 (Step 6) |  |  | Init.: |
| 16 |  | All copper-based network interface ports utilize registered jack (RJ)-45 connectors. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 5) |  |  | Init.: |
| 17 |  | The optical ports are Type ST, SC, LC, or FC only. Mechanical transfer (MTRJ) type connectors are not used. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 6) |  |  | Init.: |
| 18 | 996-3.4.4 | Device server supports local and remote configuration and management, with access to all user-programmable features, including but not limited to addressing, port configuration, device monitoring, diagnostic utilities, and security functions. |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS003 (Step 7) |  |  | Init.: |
| 19 |  | Device server supports configuration and management via SNMP, telnet login, and browser-based interface. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review and Functional Inspection |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 8), DS003 (Step 8) |  |  | Init.: |
| 20 | 996-3.4.5 | There are no self-tapping screws on the exterior of the assembly. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 7) |  |  | Init.: |
| 21 |  | All parts are made of corrosion-resistant materials, such as plastic, stainless steel, anodized aluminum, brass, or gold-plated metal. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 9) |  |  | Init.: |
| 22 | 996-3.4.6 | The device server operates using a nominal input voltage of 120 VAC |  | *Applicant may provide comments in this field.* | Functional Inspection |
| TERL Test Cases (Steps): DS002 (Step 8), DS003 (Step 9) |  |  | Init.: |
| 23 |  | If device requires nominal input voltage of less than 120 VAC, appropriate voltage converter is furnished. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 8) |  |  | Init.: |
| 24 |  | Maximum power consumption does not exceed 12 watts. |  | *Provide product literature, specifications, user manual, or similar information that shows the product meets this requirement.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 10) |  |  | Init.: |
| 25 |  | Device server includes diagnostic LEDs, including link, TX, RX, and power LEDs. |  | *Applicant may provide comments in this field.* | Physical Inspection |
| TERL Test Cases (Steps): DS002 (Step 9) |  |  | Init.: |
| 26 | 996-3.4.7 | The device server performs all required functions during and after being subjected to the environmental testing procedures described in NEMA TS2 2021, Sections 2.2.7, 2.2.8, and 2.2.9. |  | *Provide a first or third-party test report that demonstrates compliance with* testing procedures described in NEMA TS2-2021, Sections 2.2.7, 2.2.8, and 2.2.9. *If a voltage converter is required for the device to operate with a 120VAC input voltage, then the voltage converter must be tested with the device, i.e. in the temperature chamber. The test report must be less than 5 years old, and meet the requirements of FDOT Product Certification Handbook, section 7.2.* | Document Review |
| *Indicate location of requested information in submittal.* |
| TERL Test Cases (Steps): DS001 (Step 11) |  |  | Init.: |
| 27 | 684-5.1 | Device Server has a manufacturer’s warranty covering defects for 1 year from the date of final acceptance. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): DS001 (Step 12) |  |  | Init.: |
| 28 |  | Device Server manufacturer will furnish replacements for any part or equipment found to be defective during the warranty period at no cost to the Department or the maintaining agency within 10 calendar days of notification. |  | *Provide a statement of conformance in this field.* | Compliance Matrix Review |
| TERL Test Cases (Steps): DS001 (Step 13) |  |  | Init.: |

**Document History for:**

**Device Server Compliance Matrix**

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| Rev | Description | Authored and Checked | Reviewed | Approved | Approval Date | Rev More Stringent? |
| 1.0 | Conversion to Word. | D. Vollmer | J. Morgan | J. Morgan | 10/03/2012 | No |
| 2.0 | Changed document control panel to include column for “Rev more stringent?” and added Rev # to header of matrix corresponding to latest approved document. Modified disclaimer to indicate compliance matrix is governing document and referencing PCH section 7.2 in place of A601-3. | A. Burleson | J. Morgan | J. Morgan | 02/28/2013 | No |
| 3.0 | Remove warranty language | D. Bremer | J. Morgan | J. Morgan | 05/09/2013 | No |
| 4.0 | Changed to match FA 7-30-13 | R. Meyer | J. Morgan | J. Morgan | 08/15/2013 | No |
| 5.0 | Replaced FDOT logo with latest approved one and added CM ID # to header. | D. Bremer | J. Morgan | J. Morgan | 03/13/2014 | No |
| 6.0 | Modified Evaluation Methods to match TM. Revised document approver title. | R. Meyer  A. Burleson | J. Morgan | J. Morgan | 10/30/2014 | No |
| 7.0 | Changing FA Date to the latest approved one 01/06/2015. No content change for TERL. Modified ID 22 to Document Review only. | M. Lucas | J. Morgan | J. Morgan | 08/19/2015 | No |
| 8.0 | Moved from spec 684 to 996. | W. Geitz | M. DeWitt  J. Morgan | D. Vollmer | 12/29/2021 | No |
| 9.0 | Added test cases and steps. Updated to match the latest FA approved spec 10-24-22. | D. Bremer | V. Johnson  W. Geitz | D. Vollmer | 09/19/2023 | No |
| 10.0 | Updated to latest FA dates of 12-4-23 and 12-1-23 for specs 684 and 996, respectively. | W. Geitz | V. Johnson | D. Vollmer | 01/19/2024 | No |