

INCH-POUND

A-A-59283

20 June 2003

COMMERCIAL ITEM DESCRIPTION

Test Set, Transmission Line

The General Services Administration has authorized the use of the Commercial Item Description (CID) for all federal agencies.

1 Scope. This Commercial Item Description (CID) describes an eight-channel power line monitor. This CID is meant as a minimum requirement for the power line monitor in which only those manufactures meeting or surpassing the following requirements are supplied per this CID.

2 Salient Characteristics. The equipment shall be capable of operation within the accuracies, limits, and specifications herein.

2.1 Classification. Equipment covered by this CID may be commercially available equipment modified to the extent necessary to meet the following description. The equipment shall be Class 3 in accordance with MIL-PRF-28800 except as specified herein.

2.2 Order of Precedence. In the event of a conflict between the text of this CID and the references cited herein (except for associated detail specifications), specification sheets or MS standards the text of this CID shall take precedence. Nothing in this CID, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

2.3 Safety and Environmental. The equipment shall meet all safety and environmental requirements as specified in MIL-PRF-28800 for the classification as stated herein.

2.4 Reliability. The design of the equipment shall be such that under normal use and operation the equipment does not fail within 2000 hours of operation with a statistical certainty of 95%.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data that may improve this document should be sent to: WR-ALC/LEEC, 295 Byron Street, Robins AFB, GA 31098-1611

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2.5 Calibration and Maintenance Adjustments. The design of the system shall provide for readily accessible calibration and maintenance adjustments. These adjustments shall be provided by variable value components, which are adjustable, by the use of simple means. The calibration by substitution of selected components or parts is unacceptable unless specifically approved. The calibration adjustments, wherever possible, shall be accessible without removal of the instrument case or modules. The calibration interval shall be a period of one year or greater, based on an operating time of 2000 hours per year.

2.6 Electrical Power Sources and Connections. The equipment shall operate from nominal commercial, military, and shipboard power source of 120Vrms or 240Vrms single-phase AC ($\pm 10\%$) at line frequencies of 50 Hz and 60 Hz ($\pm 5\%$) as specified in MIL-PRF-28800.

2.7 Performance Characteristics. The equipment shall be capable of measuring, displaying, and storing wave-forms within the minimum ranges, specifications, and accuracies described in this CID when calibrated in accordance with the manufacturer's approved procedures and described under calibration requirements contained herein.

2.7.1 Acquisition Channels. The equipment shall acquire data on 8 channels simultaneously and all performance requirements specified herein shall be accomplished for all channels.

2.7.2 Sample Rate. The equipment shall provide a minimum sample rate of 128 samples/cycle for each channel for voltage and current acquisition.

2.7.3 Voltage Channels. The equipment shall have at least four independent voltage measurement channels.

2.7.3.1 Power Configuration Single Phase Systems. The equipment shall measure single and dual single-phase AC systems both grounded and ungrounded.

2.7.3.2 Power Configuration Poly phase Systems. The equipment shall measure three phase WYE and three phase DELTA polyphase AC systems both grounded and ungrounded.

2.7.3.3 Input Voltage Range. The equipment shall provide an AC voltage range of 10 volts root-mean-square (Vrms) to 600 Vrms over the frequency range of 45 to 415 Hertz (Hz).

2.7.3.4 Voltage Measurement Accuracy. The equipment shall have a minimum measurement uncertainty for rms voltages of $\pm (1.0\% \text{ of reading (rdg)} \pm 0.5\% \text{ of full scale (fs)})$ over the input voltage and frequency range.

2.7.3.5 Voltage Connections. The equipment shall have interconnecting cables and any additional accessories to connect the equipment in single phase or polyphase configurations.

2.7.3.6 Voltage Channel Input Impedance. The equipment input impedance shall be at least 1 MOhm.

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2.7.4 Current Channels. The equipment shall have at least four independent current measurement channels with differential inputs and shall record rms current simultaneously with the voltage channels.

2.7.4.1 Input Current Range. The equipment shall provide current measurement of at least 1 Ampere rms (Arms) by the use of current transformer (CT) probes.

2.7.4.2 Current Measurement Accuracy. The equipment shall have a minimum measurement uncertainty for rms current of $\pm (2.0\% \text{ of rdg} \pm 0.5\% \text{ of fs})$ with CT probes attached.

2.7.4.3 Extended Current Range. The equipment shall have CT probes for each channel, which provide measurement capability over the range of 0.5 to 300 Arms.

2.7.5 Impulsive Transient Measurements. The equipment shall provide measurement of impulsive transients over the range of 100 V to 1000 V peak and current range of 3 A to 1000 A.

2.7.6 Measurements. The equipment shall provide the following measurements as defined by IEEE-STD-1159 over the ranges specified for spectral content, duration, and magnitude.

2.7.6.1 Power Quality Measurements. The equipment shall monitor, capture, and display the following electromagnetic phenomena or electromagnetic disturbances: Voltage impulsive transients; Oscillatory transients; Instantaneous, momentary, and temporary voltage and current sags and swells; Long duration interruptions or over-voltage, under-voltage, and sustained interruptions; and voltage imbalance.

2.7.6.2 Power, Power Factor, and Consumption Measurements. The equipment shall measure and/or calculate: Power in W, KW, VA, and KVA; True and displacement Power Factor; Reactive Power; and Energy in Watt-hours and KWH.

2.7.6.3 Harmonic Measurements. The equipment shall monitor, capture, and display harmonics up to 50th and total harmonic distortion.

2.7.7 Non-interruptible Power Supply. The equipment shall have a rechargeable non-interruptible power supply that will provide one hour of monitoring operation when equipment power is lost and the power supply life shall be at least two years.

2.7.8 Display. The equipment shall have a display, either as an integral part of the equipment or external, providing representations of captured data in graphical and data formats.

2.7.8.1 Phasor Diagrams. The equipment shall provide and display phasor diagrams indicating phase relationships between voltage, current, and power.

2.7.8.2 Magnification. The equipment shall provide magnification capability to magnify waveform events for accurate measurements.

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2.7.8.3 Cursors. The equipment shall provide the capability of selecting events by movement of vertical and horizontal indicators to select areas of interest.

2.7.8.4 Data Analysis. The equipment shall provide an analysis capability to view recorded events by use of external software and/or internal routines.

2.7.8.5 Date and Time Stamp. The equipment shall provide the time and date of each event recorded.

2.7.9 Required Accessories. The following (minimum) accessories shall be required with each deliverable equipment.

2.7.9.1 Probes: The equipment shall have passive probes provided for all channels which allow the equipment to meet all requirements of this CID. The CT and PT probe ratio shall be automatically recognized and the scale factor of the equipment adjusted appropriately.

2.7.9.2 Standard Accessories. The standard accessories as supplied by the manufacturer shall be included.

2.7.9.3 Additional Accessories. The following items shall be required with each deliverable piece of equipment, if not considered as standard accessories: Tutorial/User Reference Manual, and a U.S. Power Cord.

3. Regulatory Requirements. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

4. Quality Assurance Provisions.

4.1 Product Conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards and quality assurance practices, and be the same product offered for sale in the commercial market. The government reserves the right to require proof of such conformance.

4.2 Metric Products. Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within the specified tolerances using conversion tables contained in the latest revision of Federal Standard No. 376, and all other requirements of this CID are met. If a product manufactured to metric dimensions exceeds the tolerances specified in the inch/pound units, a request should be made to the contracting officer to determine if the product is acceptable.

4.3 The contracting officer has the option of accepting or rejecting the product.

5. Packaging.

5.1 Preservation, Packing, and Marking. Preservation, packing, and marking shall be as specified in the contract or order.

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6. Notes.

6.1 Sources of documents.

6.1.1 Military Specifications, Standards, and Handbooks referenced herein may be obtained from the Standardization Documents Order Desk, 700 Robbins Ave, Bldg 4, Section D, Philadelphia, PA 19111-5094.

MIL-PRF-28800, Test Equipment for Use with Electrical and Electronic Equipment, General Specification for

6.1.2 The Code of Federal Regulations (CFR) may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC, 20402.

6.1.3 Institute of Electrical and Electronics Engineers (IEEE) standards products can be ordered directly at the IEEE Operations Center. Phone: (800)678-IEEE. Mail: IEEE Operations Center, Sales Office, 445 Hoes Lane, PO Box 1331, Piscataway, NJ, 08855-1331, USA.

IEEE Std 743-1995, IEEE Standard Equipment Requirements and Measurement Techniques for Analog Transmission Parameters for Telecommunications.

IEEE Std 743-1984, IEEE Standard Methods and Equipment for Measuring the Transmission Characteristics of Analog Voice Frequency Circuits.

MILITARY INTEREST

Custodian:
Air Force – 99

Preparing activity:
Air Force - 84

Agent:
Air Force - 99

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