

## MODEL MAE-CAB-HEMTT-2000 MILITARY HEMTT CAB CONSOLE TEST SYSTEM SPECIFICATION



The Cab Test System must consist of a Pentium-based Desktop or Industrial Computer, mobile NEMA 12/13 Fan-Cooled Enclosure, 24" LCD Color Monitor, NATIONAL INSTRUMENTS Data Acquisition Hardware, 1500/1800 BTU Air Conditioning Unit, DC power supplies, Active Load Resistors, Fast-Acting Circuit Breakers, RF Radio Remote Control, wired Barcode Scanner, one (1) custom Test Harness, and custom application test software.

The Cab Test System to conduct a semi-automated, functional test of the Red River Army Depot Military Heavy Expanded Mobility Tactical Truck (HEMTT) Main Console (installed) through the following external Cab connectors:

- MC1 - CHASSIS, 31-pos
- MC2 - ENGINE, 23-pos
- MC5 - CHASSIS, ABS, 31-pos
- MC14 - DIAGNOSTIC CONNECTOR, 9-pos (inside cab)
- MC63 - ARTIC HEATER OPTION, 4-pos (?)

### GENERAL:

The Cab Console Tester must verify proper electrical assembly of the HEMTT Cab Console-Under-Test (CUT) as it is installed inside the Cab. The Cab Console Tester requires one (1) Operator to manually connect and disconnect cables (test harness) to the HEMTT Cab's connectors as well as actuate switches, levers, push buttons, etc. on the Console itself. The Cab Tester must provide 24VDC to power the Cab.

## GENERAL, (Cont'd):

Where applicable, the Console's electrical functions will be automatically checked by the computer to decrease cycle time and eliminate the risk of an Operator error. Automatic tests will be limited to functions that can be directly accessed through external devices such as load cells, accelerometers, etc. and/or the Cab's CAN BUS controller.

The feasibility to perform these automated tests will be determined by standard software capabilities. Functional tests that cannot be automated will require the Operator to observe the vehicle during the test and verify the test results.

The Test Application Software will automatically prompt the Operator to perform and confirm pass/fail of these manually-driven tests. This may be done through the handheld, wireless RF remote control or the Computer's keyboard/mouse.

The Operator will use the Cab Console Tester's Barcode scanner to scan in the Unit's Order Number or Build Sheet along with the Model and Serial number at the start of the test process. The Model and/or Serial can also be manually entered via the Keyboard.

A "loaded" test must be conducted, i.e., when possible, each CUT circuit will have up to (1) Amp of current drawn through it in order to perform a more effective test. All tester output channels to be protected via resettable circuit breakers accessible from the outside of the test enclosure. The entire system to reside within a mobile computer enclosure with one (1) set of bulkhead mounted connectors.

One (1) HEMTT Cab Console test harness is included in the base price of the Cab Tester.

### **HEMTT Console**



## SYSTEM HARDWARE:

The HEMTT Cab Console Test System to include the following hardware:

- Mobile Steel Enclosure on lockable casters (76" high, 32" wide, 24" deep) with:
  - 1500/1800 BTU wall-mounted Air-Conditioning unit
  - Test Harness Holder
  - Windows 7 Desktop or Industrial PC with two GB Ethernet ports.
  - 24" Widescreen LCD monitor inside enclosure
  - Four-Port SVGA Video Splitter
  - Three Port SVGA interface panel for external monitors
  - Industrial Wireless Barcode Scanner
  - Seven Port USB hub
  - National Instruments Compact DAQ w/ 8-slot chassis with:
    - 64-Digital Inputs
    - 50Ω, 50W Load resistors on all digital inputs channels that interface with cab under test.
    - 64-Digital Outputs
    - Circuit breakers with alarm on all digital outputs that interface with cab under test.
    - 40-channels will be 5-amp output, 8-channels will be 10-amp outputs.
    - Eight digital output channels for CAN bus switching. Each output to have 120Ω termination resistors connected when output is not used.
    - Eight digital output channels with potentiometers for sensor simulation switching
    - 32SE/16DI Analog Input channels
    - One High-speed CAN Adaptor.
  - Eight-channel Radio Remote Control Transmitter with Receiver
  - One (1) set of Bulkheads with four 108-pos Connectors (4 X 108)
  - 24-volt DC, 63-amps, main power supply, adjusted to 27.6-volt (Charge voltage)
  - Current monitor on 24V power supply to Cab Console
  - Emergency Stop push-button for rapid disconnection of power to Cab Console
  - 24-volt DC, 20-amps control power supply.
  - 5-volt DC, 3-amps for sensor power supply
  - Front interface panel with diagnostic power for CAN, two USB ports, 110VAC, 5A power outlet.
  - Rear interface panel with Ethernet ports, two USB ports, 110VAC, 5A outlet.
  - One test harness connecting to the following connectors on the HEMTT Cab:
    - MC1 - CHASSIS, 31-pos
    - MC2 - ENGINE, 23-pos
    - MC5 - CHASSIS, ABS, 31-pos
    - MC14 - DIAGNOSTIC CONNECTOR, 9-pos (inside cab)
    - MC63 - ARTIC HEATER OPTION, 4-pos
  - 1 set of power and ground cables (4-AWG) with insulated alligator clips
  - Documentation package (in English) consisting of two (2) electronic (CD-ROM) copies of the Operator's manual.



## APPLICATION SOFTWARE:

The application software must be programmed using Microsoft Visual Basic .NET within a WINDOWS 7 Professional operating system.

The application software must provide the following functions:

- Barcode input of CUT S/N
- Option list down-loaded from database to automatically configure CUT test
- Upload CUT test results to database
- Electrical control along with monitoring essential test stand conditions
- Data acquisition routines capturing data, compare it to preset limits, and send it to the screen.
- Operator interface to allow input of test identification, display of prompts to guide the operator through the test sequence, and real-time display of test data and other conditions being monitored.
- User configurable diagnostic test screens.
- Capability to display digital photographs of CUT set-up and/or test procedures
- Test specifications, system configuration and calibration data stored and maintained using MS EXCEL 2013 or later spreadsheets with capability of easy editing by properly trained personnel.
- Standard service screen displaying all channels of I/O and their status. All outputs can be manually controlled and adjusted (if analog) to assist maintenance personnel in troubleshooting situations.

The Hardware and Software must functionally test the following switches on the Console (Switch Panel):

- |                             |                          |                      |
|-----------------------------|--------------------------|----------------------|
| • BEACON LAMP               | • AUX HYDRAULIC          | • ABS DISABLE        |
| • HIGH IDLE                 | • WORKLAMP               | • HYDRAULIC ENABLE   |
| • ENGINE BRAKE<br>LO/MED/HI | • ENGINE BRAKE<br>ON/OFF | • CHEM ALARM         |
| • GPFU                      | • WIPER LO/HI            | • WASHER             |
| • DIMMER                    | • BLACK-OUT SELECT       | • MASTER LIGHTING    |
| • IGNITION                  | • AXLE LOCK              | • BLACK-OUT LIGHTING |
| • DOME LIGHTING             | • START                  |                      |

A runoff of the test system must be conducted at the customer's facility in the presence of customer personnel.

Shipping is F.O.B., Supplier location

One (1) year on-site warranty, excluding cabling, must be included with this system.

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