



CAN COMMUNICATIONS ADAPTER
Service Tool

USER'S GUIDE
22253009



INGERSOLL RAND
PORTABLE POWER
Mocksville, N.C.



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1.0 General Overview

The **CAN COMMUNICATIONS ADAPTER** is a communications protocol converter that converts the J1939 protocol into a RS232 output that can be interpreted by the **VIRTUAL TECHNICIAN** service tool. The J1939 protocol is used on many of the tier II engines. The CAN Communications Adapter has been specifically designed to work with the following engines: Cummins QSX15 and QSL9, CAT C9 and C15 and IR 4IRD5AE and 6IRF8TE.

The engines broadcast various messages, at specific intervals, across the J1939 network. These messages include real time engine parameters such as oil pressure, intake manifold temperature and RPM. Also included, are engine fault codes that signify problems that have occurred. The **VIRTUAL TECHNICIAN** allows the service technician to view these parameters and fault codes. In conjunction with the appropriate service information, the **VIRTUAL TECHNICIAN** can be used to troubleshoot engine problems and make necessary repairs.



CAN COMMUNICATIONS ADAPTER KIT

The ***VIRTUAL TECHNICIAN*** must have software **version 2.2.2** or later for the CAN communications adapter to function.

2.0 Unpacking the CAN Adapter

The CAN COMMUNICATIONS ADAPTER kit contains the protocol adapter, Cummins, I-R engine cable, CAT engine cable, RS232 cable, CD with software and manual. If any of these items are missing, contact Ingersoll Rand Customer Support at 800-633-5206 to get the missing components. The picture below shows the contents of the kit.



CAN COMMUNICATIONS ADAPTER KIT

The part numbers are as follows:

<u>Item</u>	<u>I-R P/N</u>
Communications adapter	22391072
Cummins/I-R engine cable	22391064
CAT engine cable	22391106
RS232 cable	22391080
Molded case	22399331
Virtual Technician software	22266761
Instruction manual	22266480

3.0 Connecting The CAN Adapter To An Engine

As describe previously, the CAN Communications Adapter Kit is designed to work with three engines: Cummins, CAT and I-R. There are two cables supplied in the kit to connect the these engines. P/N 22391106 cable connects to the CAT engine and is shown below.



CAT Engine Cable



P/N 22391064 cable connects to the Cummins and I-R engines and is shown below.



Cummins/I-R Engine Cable

P/N 22391080 cable is used to connect the CAN adapter to the ***VIRTUAL TECHNICIAN*** and is shown below.

**RS232 Cable**

The CAN adapter is shown below:

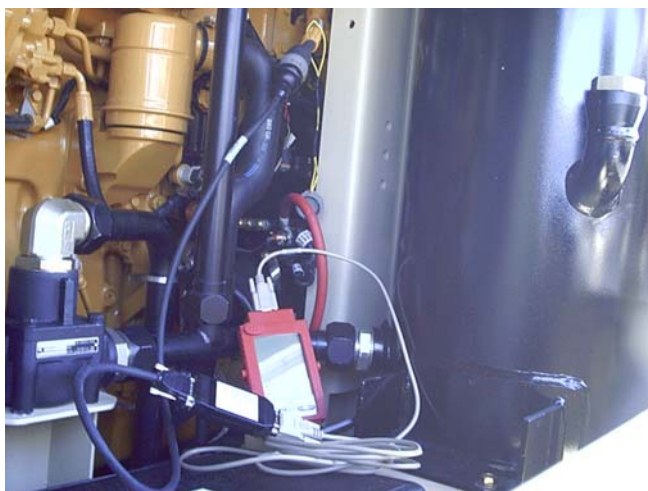
**CAN Communications Adapter**

Connect one of the 9-pin connectors on the RS232 cable to the 9-pin connector on the CAN adapter. Connect the other 9-pin connector to the 9-pin connector on the ***VIRTUAL TECHNICIAN*** as shown below.



RS 232 serial cable connected

Connect the 15-pin connector from the proper engine cable to the 15-pin connector on the CAN adapter as shown below.



Engine cable connected to CAN adapter

The service tool is now properly connected to the engine and ready to extract engine information.



4.0 Reading Engine Fault Codes

Power up the **VIRTUAL TECHNICIAN**. Go to the main menu and tap the Ingersoll Rand icon. This will enter the Ingersoll Rand applications. The Ingersoll Rand icon is located on the second page of the main menu. If the first page of the menu appears, tap the arrow on the left of the screen to move to the second page of the menu.

Once the Ingersoll Rand applications appear, the PDA screen below will appear.



Tap on the “Engine” icon. This will enter the program for the CAN communications. The next screen will ask if the service tool is connected to an engine. Tap “OK”. The next screen to appear will be the real time parameters display. This list various parameters from the engine that are updated approximately every second. There are four pages of parameters and these can be accessed using the arrows at the right of the screen. Tap the arrow to advance to the next page or go back to the previous page(s). The “Pause” icon can be used to stop the one second update and hold the existing parameters. The “OK” icon is used to back out of the screen. It will return to the top level “Engine” icon.

Taping the “Engine Faults” icon will produce a list of active and non-active engine faults. Once the faults are displayed, select a particular fault by taping the screen over it. The fault will be highlighted. Now tap the “Troubleshooting” icon. A description of the fault will be displayed along with some troubleshooting hints to initiate the troubleshooting process.



APPENDIX SECTIONS

The following appendix sections provide basic engine troubleshooting information:

APPENDIX A (CAT Engine Troubleshooting)

APPENDIX B (I-R Engine Troubleshooting)

APPENDIX C (CUMMINS Engine Troubleshooting)

These sections should be used with the fault codes read by the VIRTUAL TECHNICIAN. The sections include detailed troubleshooting information for each fault code.