



CAUTION: Static Sensitive Device(s).

Contains components susceptible to damage from Electrostatic Discharge. Handle only using static preventive processes.

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Introduction

Purpose

The purpose of this guide is to explain the process of removing a CDPD modem from a Smart-Alek Field Instrument and replacing it with a GSM modem.

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zed.i Client Service and Support

For installation set-ups and customer service calls,
During office hours: 403-444-1100.
After Hours and Toll Free: 1-866-732-6967.
If a zed.i representative is away or unavailable, press zero during business hours for reception to redirect your call. If outside normal hours, wait for voicemail message to indicate either a cell number to call or an on-call person.
When completing an installation or service call, please call zed.i with customer details, programming options put into Field Instrument, signal strength and channel, serial numbers, antenna style, and available sunlight into panels.

Safety Considerations



CAUTION
Work can be performed only in an area known to be non-hazardous.
The site must first be declassified.



CAUTION
Review and follow all company Safety Policies and Safe Work Procedures before you perform any work at the site.



CAUTION
Obtain all company safety certifications before performing any work at the site, e.g., H2S Alive, First Aid, etc.



CAUTION
Follow all applicable federal, provincial and state health and safety standards, e.g., Occupational Safety & Health Administration (OSHA) standards in the USA, Occupational Health and Safety (OHS) standards in Canada, etc.



CAUTION
Wear Personal Protective Equipment (PPE) that is appropriate to the work site.

Equipment required

- Smart-Alek V2 CDPD Field Instrument.
- The assembled Strongback-GSM Modem Unit comprised of the Strongback, GSM modem with corresponding Modem Interface PCA.
- Two #8-32 x 1/2-inch Machine Screws for attaching the Strongback-Modem Unit to the EP (Explosion-Proof) Body of Smart-Alek V2.
- Two #8 Lock Washers
- Kapton Tape (3 strips, each 2 inches long).
- 15in. lbs - 30 in. lbs torque wrench.

Firmware Update Required before you remove the CDPD modem

Ensure that the installer has the latest version of Smart-Alek Communicator.
Update the High Level (HL) Firmware on the Field Instrument. The version number of the new High Level (HL) Firmware must be version **HL.2.1.15 or higher** before swapping the modems. See the Smart-Alek Communicator User Guide and online help for information on upgrading firmware in the Field Instrument.

Offline Mode

Before you turn off the Field Instrument (see next page), ensure it is in **OFFLINE Mode**. You set the mode using Smart-Alek Communicator software. See the Smart-Alek Communicator User Guide for details about setting the Operating Mode.

Removing the CDPD Modem

- To remove the Strongback-CDPD Modem Unit from the EP Body:
- 1 Ensure you've followed proper ESD procedures.
- 2 Remove the back dome cover from the Field Instrument.

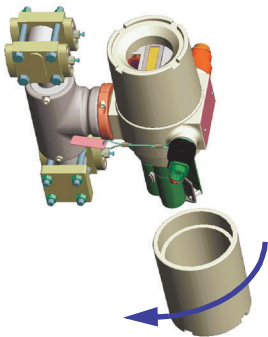
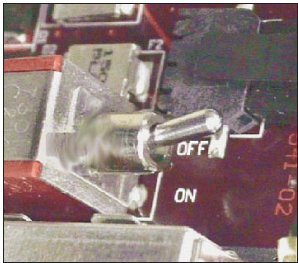


Figure 1 Removing the Back Dome Cover from the Explosion-Proof (EP) body. The Back Dome cover is threaded on. Turn to remove.

- 3 Set the Power Toggle Switch on the Field Instrument to the OFF position.



Make sure you are properly grounded before touching the toggle switch.
Before you turn the toggle switch OFF, make sure you let the LCD shut itself off first.

Figure 2 Power Toggle Switch on Modem

If the LCD display is on, wait until it shuts itself off before you turn the toggle switch to Off.

- 4 Disconnect and remove the battery from the Field Instrument.
- 5 Remove the #6-32 hex nut, the #6 lock washer, and the ring lug of the 8-inch ground wire from the #6-32 x 1/4-inch machine screw from the grounding hole in the Modem Interface PCA

NOTE
Be sure the ring lug on the ground wire does not contact any traces or headers on the Modem Interface PCA.

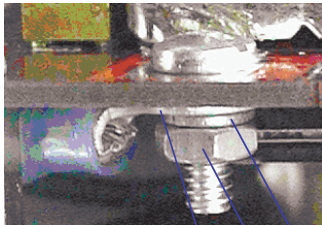
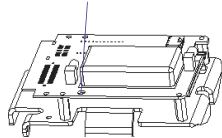


Figure 3 Ground wire attachment assembly
Ground Wire Attached to Modem Interface PCA
(Top of PCA on left side of photo, bottom side on right)



- 6 Remove the strongback-CDPD modem unit from the EP Body as follows:
Partially unscrew the two #8-32x1/2 inch machine screws from the strongback mounting holes as shown in Figure 4. Lift the strongback at the same time. The strongback will lift out with screws and lock washers in place in the strongback. Partially removing the screws while lifting the strongback will keep the #8 lock washers from falling into the printed circuit board's cavity.

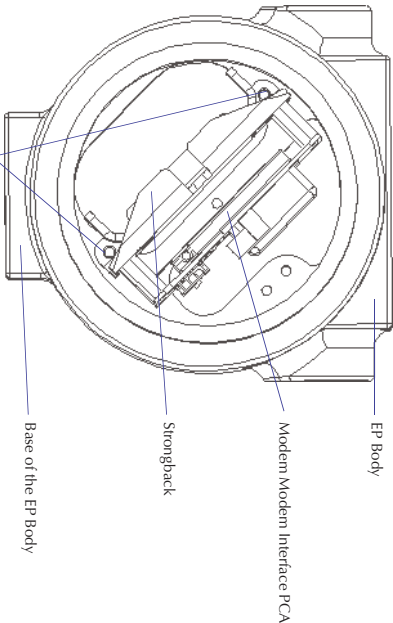
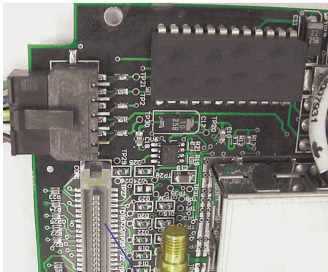


Figure 4 Machine screw installation location
-The silkscreen files attached to this report shows what components should be placed where.

- 7 Remove any Kapton Tape covering the 20x2 latch-type connector, then remove the 20x2 latch-type connector on the Signal Harness from the 20x2 latch-type header on the Modem Interface PCA. To remove the latch-type connector, squeeze both latches inwards, then pull the connector off.



20x2 Signal Harness Connection

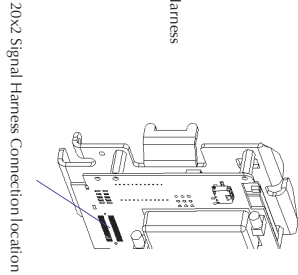
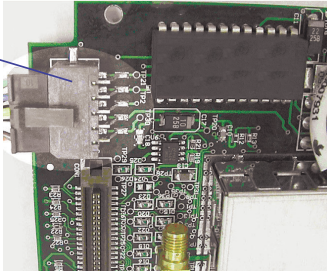


Figure 5 20x2 Signal Harness Connection on Modem Interface PCA

- 8 Remove the 3x2 connector on the end of the power harness from the 3x2 header on the non-modem side of the Modem Interface PCA.



Power Harness Connection location

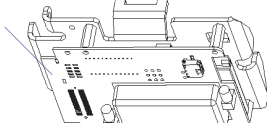
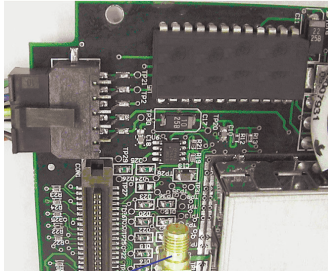


Figure 6 Power Harness Connection on Modem Interface PCA

- 9 Remove the SMA connector on the connecting cable to the SMA 90 degree jack on the Modem Interface PCA.



RF Cable Connection location

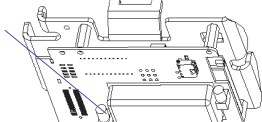


Figure 7 RF Cable Connection to Modem Interface PCA

Installing the GPRS strongback modem

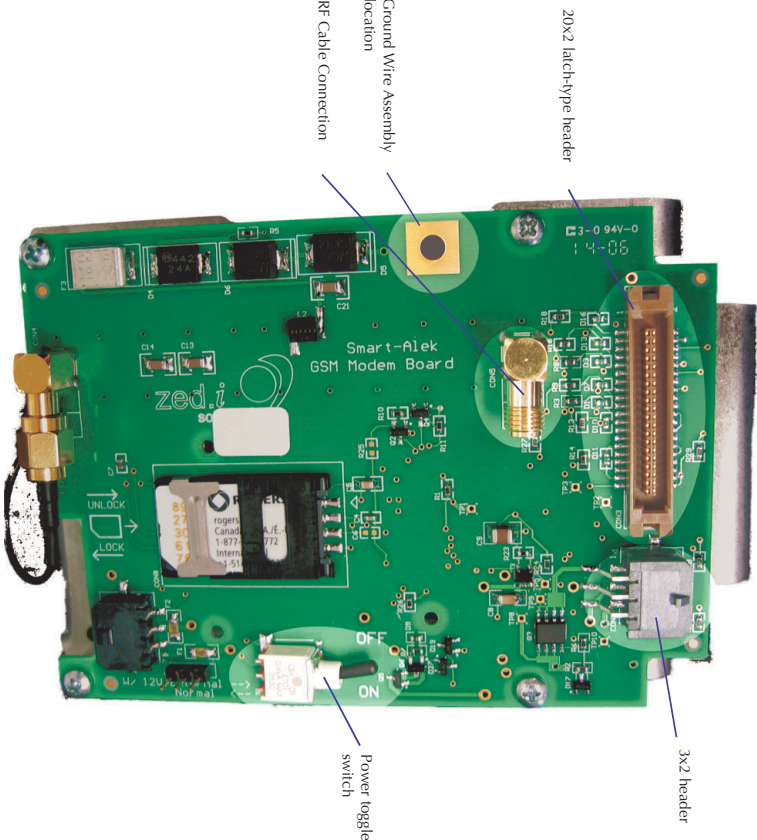


Figure 8
Typical Strongback-GSM Modem Unit

- To install the assembled Strongback-GPRS Modem Unit into the EP Body:
- 10 Attach the 20x2 latch-type connector on the Signal Harness to the 20x2 latch-type header on the Modem Interface PCA.

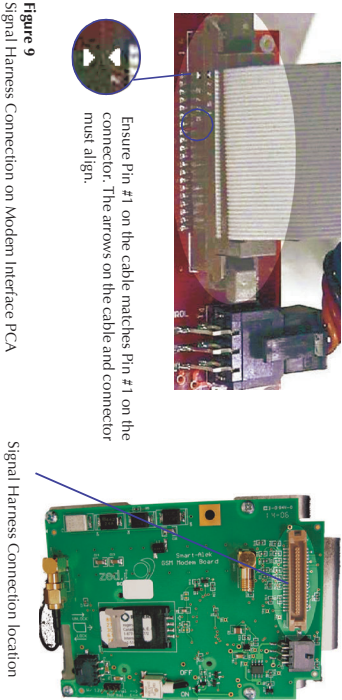


Figure 9
Signal Harness Connection on Modem Interface PCA

NOTE Be sure the signal harness is not twisted and the latches snap securely in place.

- 11 Ensure the 20x2 latch-type signal harness connection is as tight as possible.
- 12 Apply a 2 inch strip of Kapton tape across the face of the signal harness connection (facing the SMA connector) on the RF/Power cable installed on the Modem Interface PCA) to secure the connection as shown in the following photo.

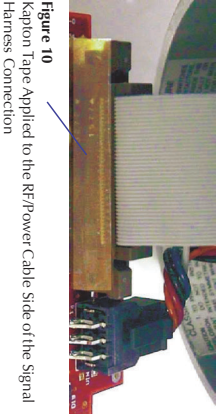


Figure 10
Kapton Tape Applied to the RF/Power Cable Side of the Signal Harness Connection

NOTE

Even though the 20x2 signal harness connection is a latch-type connection, the connection can come apart during normal assembly or shipping enough to cause the Smart-Alek to fail during installation. The Kapton tape is used to prevent such failure and must be “rubbed-down” across the connection to ensure it holds the connector together securely.

Similarly on the side of the signal harness connection facing the power harness connection, apply a 2"-inch strip of Kapton tape across the face of the signal harness connection as shown in the following photo.



Figure 11
Kapton Tape Applied to the Power Harness Side of the Signal Harness Connection

13 Attach the SMA RF cable inside the Smart-Alek Explosion-Proof (EP) body, to the SMA 90 degree jack on the Modern Interface PCA. Torque to 15 in. lbs. The other end of the RF Cable

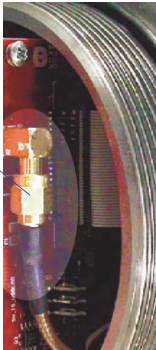
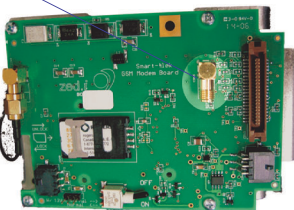


Figure 12
RF Cable Connection to Modern Interface PCA



RF Cable Connection location

attached to Con 4 of the Printed Circuit Board.

14 Attach the 3x2 connector on the end of the power harness to the 3x2 header on the non-modem side of the Modern Interface PCA.

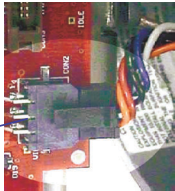
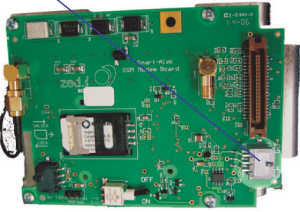


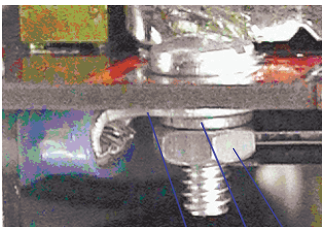
Figure 13
Power Harness Connection on Modern Interface PCA



Power Harness Connection location

15 Attach the #6-32 hex nut, the #6 lock washer, and the ring lug of the 8-inch ground wire from the #6-32 x 1/4-inch machine screw from the grounding hole in the Modern Interface PCA

NOTE
Be sure the ring lug on the ground wire does not contact any traces or headers on the Modern Interface PCA.



#6-32 Hex Nut
#6 Lock Washer
Ring Lug of 8-inch ground wire
Ground wire attachment assembly location

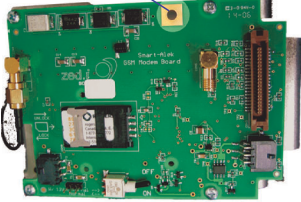


Figure 14 Ground wire attachment assembly
Ground Wire Attached to Modern Interface PCA
(Top of PCA on left side of photo, bottom side on right)

16 Insert the strongback-GSM modem unit into the battery end (back end) of the EP Body so that the battery side of the strongback is oriented toward the base of the EP Body. Refer to the following diagram.

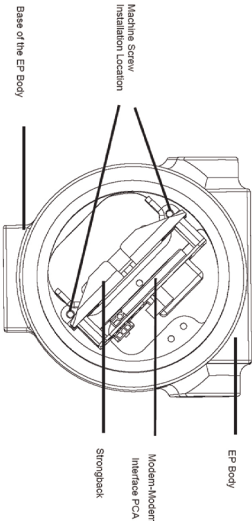


Figure 15
Strongback Installation into EP Body

NOTE

Torque the machine screws to 30 in. lbs.

17 Secure the strongback to the inside of the EP Body by first placing a #8 lock washer over the threads of each of the two #8-32x½ inch machine screws, then threading the screws through the strongback mounting holes into the EP Body mounting holes at the locations shown in the above drawing.



Make sure the cables or wires inside the EP Body are not pinched when you secure the Strongback-GSM Modem Unit into the EP Body. If the cables or wires are pinched, performance of the Field Instrument could be impaired.

The Field Instrument is now ready for initialization and testing.

See the Smart-Alek Communicator v2 User Guide for GPRS initialization and testing instructions.

Verifying Field Instrument LCD readings and attaching the GSM tag

Verify the LCD (liquid crystal display) on the front of the Field Instrument by checking that readings are displayed and checking that the readings are reasonable.



Lightly touch the attached magnet to the glass cover, directly in front of the magnetic switch. If the glass cover is off, hold up the magnet in front of the switch, but **DO NOT** touch the switch or circuit boards with the magnet.



Figure 16
Activating LCD display with magnet.

- To verify the Field Instrument LCD and readings:
 - 1 Lightly touch the magnet to the glass on the front cover of the Field Instrument, directly in front of the magnetic reed switch. The magnet is attached with wire strap to the Field Instrument.

When the Field Instrument display turns on, eight initial messages display:

Displayed Message	Description
PI,SA PSig	Static pressure. Measured in psig or kPa/g.
PDI,SA IWC	Differential pressure. Measured in IWC (inches of water column).
TRI,SA Deg F	Temperature Flow Indicator. Measured in degrees Fahrenheit or degrees Celsius.
KI,SA mcf/Day	Flow rate. Measured in thousands of cubic feet per day.
YV mcf/Day 01/11/24	Yesterday's Volume Yesterday's Date. Measured in thousands of cubic feet per day.
EI,SA Volts	Voltage of the Field Instrument's Battery. Measured in Volts.
(y/m/d) 01/11/25	The current date (today's date). Format: YY/MM/DD
12:32:55	The current time. Format: HH:MM:SS
FMODE 100009	Field Instrument Mode and Serial Number
OFFLINE	

NOTE

If the LCD clock displays 1999 or 2000, the battery on the LCD board needs replacing. You will have to reset the time on the Field Instrument.

- To attach the GSM modem upgrade tag:

Affix the GSM Upgrade sticker to the Field Instrument on the right side of the case, as shown in Figure 16.