REF 1019 CDPD to 1xRTT Upgrade Procedure 2005-06-14

CAUTION: Static Sensitive Device(s).

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

Table of Contents

Introduction

Purpose

The purpose of this guide is to explain the process of removing a CDPD modem from a Smart-Alek Field Instrument and replace it with a 1xRTT modem.

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Copyright Notice

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-1XRTT Modem Unit comprised of the Strongback, 1XRTT modem with corresponding Modem Interface PCA.
- Two #8-32 x ½-inch Machine Screws for attaching the Strongback-Modem Unit to the EP Body of Smart-Alek V2.
- Two #8 Lock Washers
- Kapton Tape (3 strips, each 2 inches long).
- 15in. lbs - 30 in. lbs torque wrench.

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.**

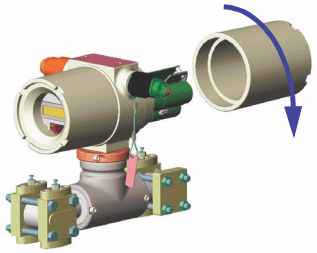


Figure 1 Removing the Back Dome Cover from the Explosion-Proof (EP) body.
The Back Dome cover is threaded on. Turn left to remove.

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

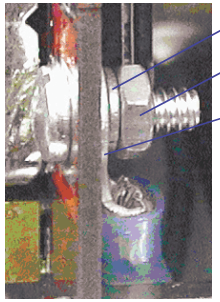
CAUTION

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

4 **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 ¼-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.



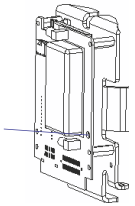


Figure 3 Ground wire attachment assembly
Ground Wire Attached to Modem Interface PCA
(Top of PCA on left side of photo, bottom side on right)

5 **Remove the strongback-CDPD modem unit from the EP Body as follows:**

Partially unscrew the two #8-32x½ 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.

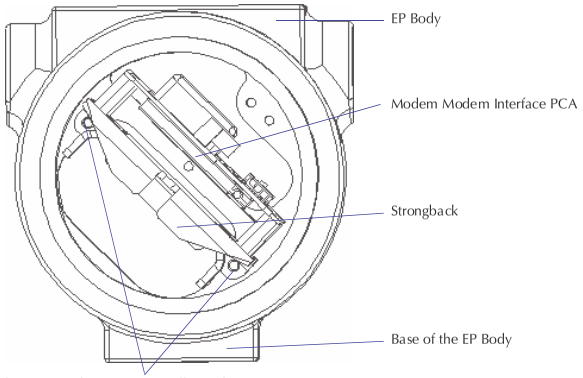


Figure 4 Machine screw installation location

6 **Remove the 20x2 latch-type connector on the Signal Harness from the 20x2 latch-type header on the Modem Interface PCA.**

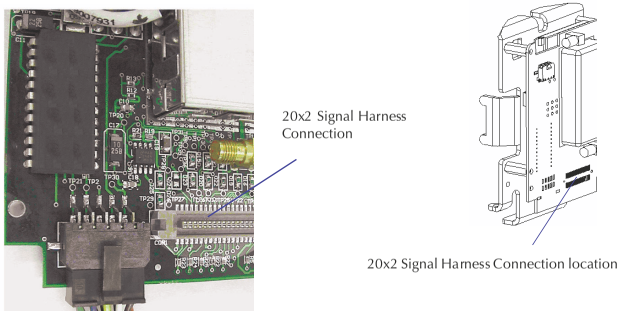


Figure 5 20x2 Signal Harness Connection on Modem Interface PCA

7 **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.**

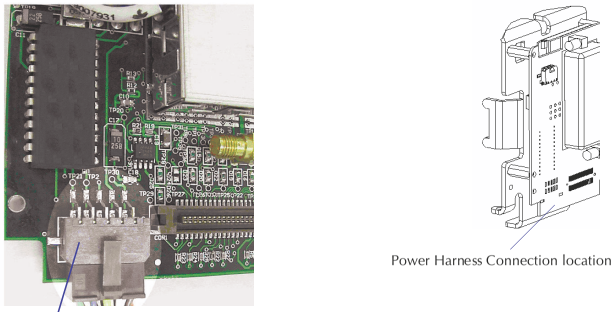


Figure 6 Power Harness Connection on Modem Interface PCA

8 **Remove the SMA connector on the connecting cable to the SMA 90 degree jack on the Modem Interface PCA.**

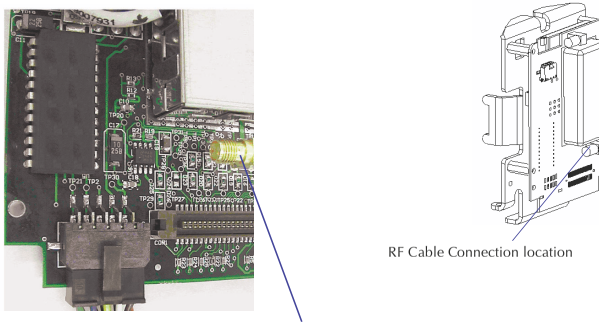


Figure 7 RF Cable Connection to Modem Interface PCA

Installing the 1xRTT strongback modem

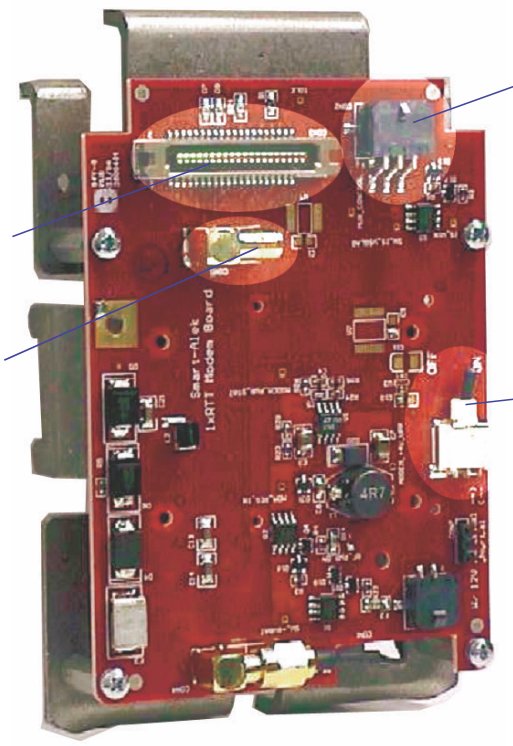


Figure 8
Typical Strongback-1XRTT Modem Unit

➤ **To install the assembled Strongback-1XRTT Modem Unit into the EP Body:**

1 **Attach the SMA RF cable inside the Smart-Alek Explosion-Proof (EP) body, to the SMA 90 degree jack on the Modem Interface PCA. Torque to 15 in. lbs.**

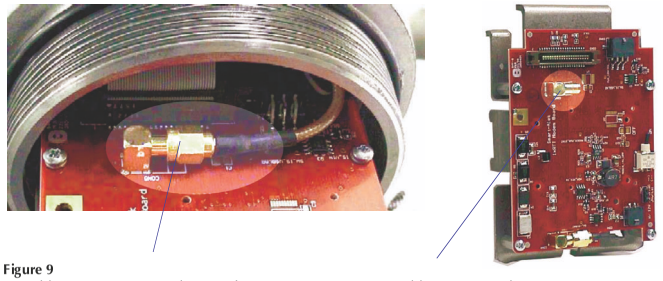


Figure 9
RF Cable Connection to Modem Interface PCA

RF Cable Connection location

2 **Attach the 3x2 connector on the end of the power harness to the 3x2 header on the non-modem side of the Modem Interface PCA.**

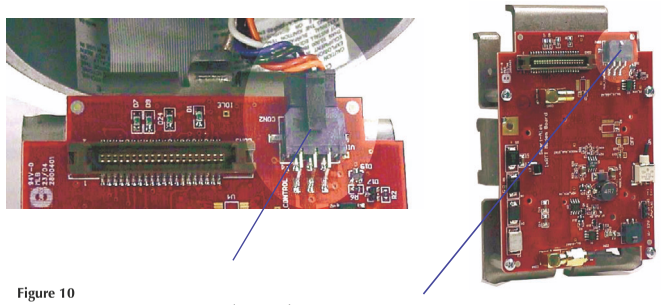


Figure 10
Power Harness Connection on Modem Interface PCA

RF Cable Connection location

3 **Attach the 20x2 latch-type connector on the Signal Harness to the 20x2 latch-type header on the Modem Interface PCA.**

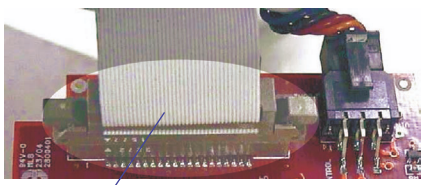
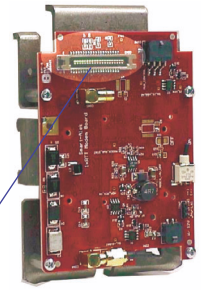


Figure 11
Signal Harness Connection on Modem Interface PCA



RF Cable Connection location

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

4 **Ensure the 20x2 latch-type signal harness connection is as tight as possible.**

5 **Apply two pieces of 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.**

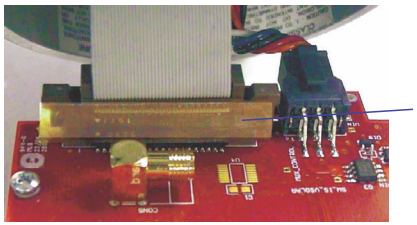


Figure 12
Kapton Tape Applied to the RF/Power Cable Side of the Signal Harness Connection

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.

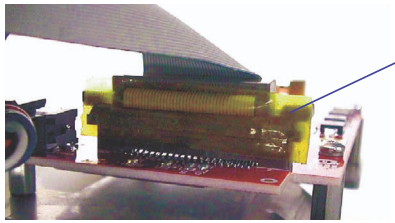


Figure 13
Kapton Tape Applied to the Power Harness Side of the Signal Harness Connection

6 **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 ¼-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.

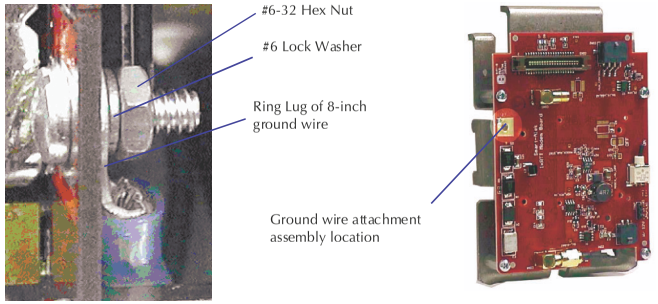


Figure 14 Ground wire attachment assembly
Ground Wire Attached to Modem Interface PCA
(Top of PCA on left side of photo, bottom side on right)

7 **Insert the strongback-1XRTT 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.**

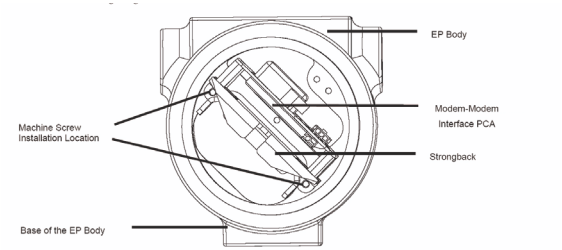


Figure 15
Strongback Installation into EP Body

NOTE Torque the machine screws to **30 in. lbs**.

8 **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.**

CAUTION Make sure the cables or wires inside the EP Body are not pinched when you secure the Strongback-1XRTT 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 1xRTT initialization and testing instructions.

Verifying Field Instrument LCD readings and attaching the 1xRTT 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.


Magnet Housing


Magnet

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.

Attach the 1xRTT modem upgrade tag here. Make sure the sticker does not cover the CSA label.

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 kPag.
PDI.SA IWC	Differential pressure. Measured in IWC (inches of water column).
TFI.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 12:32:55	The current date (today's date). Format: YY/MM/DD The current time. Format: HH:MM:SS
FiMODE 100009 OFFLINE	Field Instrument Mode and Serial Number

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

➤ **To attach the 1xRTT modem upgrade tag:**

Affix the 1xRTT Upgrade sticker to the Field Instrument on the right side of the EP case, as shown in Figure 16.