Technical Bulletin

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Summary: The Southern Technologies Dual-Track Radio Interface prevents two defect detectors from talking simultaneously while sharing a single radio transceiver for communications with train crews at double-track sites. The unit works with SmartScan NG and NG² defect detectors. The kit includes two heavy-duty DSUB-15 cables and mounting clamps for connection from the 2300-375 to each defect detector.

☐ **Critical (Affects safe operation of the system)** ☒ **Informational**

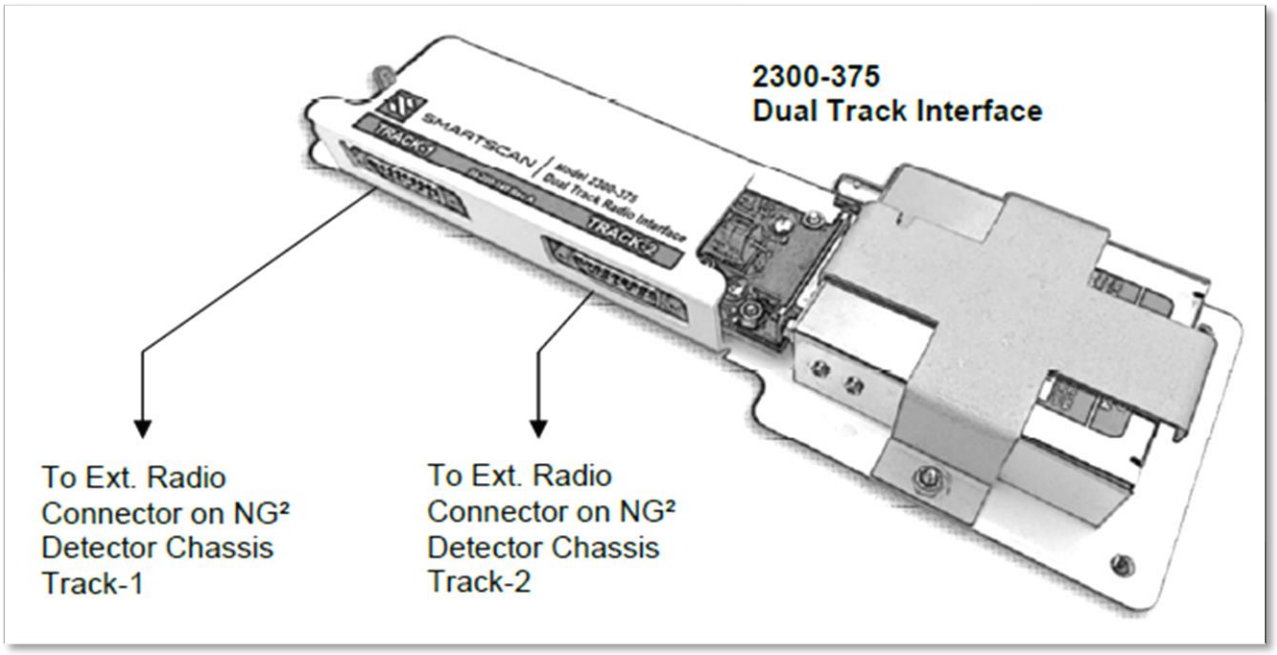

Figure 1 - Model 2300-373 Dual-Track Radio Interface with Ritron DTX-160 installed

2300-375 Installation

1. Power down the SmartScanNG² detector system for each track.
2. Locate and remove the Ritron radio from each chassis, as shown in Figure 2.
3. Install one of the Ritron radios on the 2300-375 mounting bracket, as shown in Figure 1. Set aside the remaining radio as a spare.
4. Mount the completed 2300-375 assembly in a suitable location near both detectors.

5. Connect one of the provided DSUB-15 serial cables from the Track-1 connector of the 2300-375 to the External Radio Connector on the Track-1 detector. Secure the cable with the supplied cable clamp.

6. Connect the second DSUB-15 cable from the Track-2 connector to the External Radio Connector of the Track-2 detector. Secure the cable with the supplied cable clamp.

7. Connect the coax cable from an externally mounted antenna to the Ritron radio's BNC antenna connector.

8. Reapply power to both detectors.

9. The Track-1 detector controls the channel selection for the Ritron radio mounted in the 2300-375. Select the radio channel via the CH Select Switch on the Track-1 System-Interconnect board, as shown in Figure 2. The Track-2 detector's channel selector does not affect the radio.

10. Adjust the transmit audio level as necessary with R34 of Track-1 and Track-2, as shown in Figure 3.

Note: Ritron radio frequencies can be pre-programmed before installation or from the Track-1 detector's serial interface using a laptop computer.

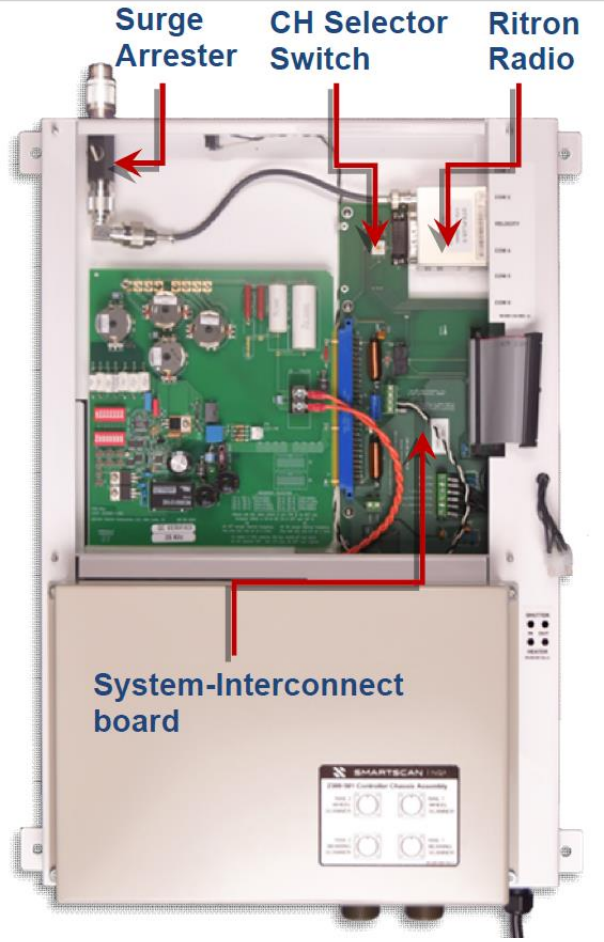

Figure 2 - SmartSCAN chassis with Controller Module removed

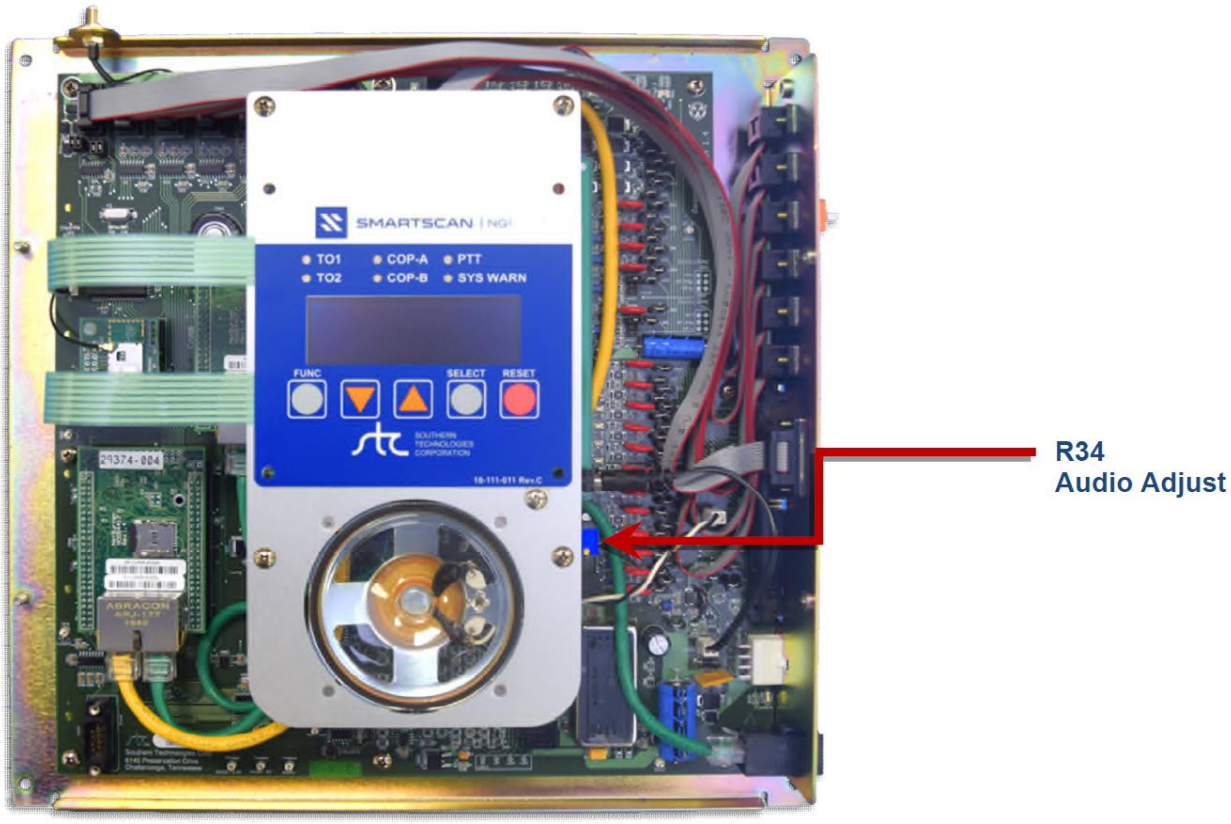

Figure 3 - Inside the Controller Module

Using a Different Radio With the 2300-375 Dual track Radio Interface

Figure 1 shows the Model 2300-375 Dual Track Interface with the Ritron DTX-160 radio installed. Alternatively, you may use a radio of a different type by removing the Ritron DTX-160 and connecting a radio interface cable from the DSUB-15 connector of the Dual-Track Radio Interface to your radio, which provides the following connections.

- Push-To-Talk (pin-14)
- Radio Transmit Audio (pin-7)
- Radio Receive Audio (pin-12)
- Carrier Detect (pin-13)
- Ground (pin-15)

NOTE: You may contact Southern Technologies for radio interface cables if you do not want to build your own. When designing your cable, consider that some radios have programmable pin functions. For example, your radio technician might have an option to choose which pins to use for Carrier Detect and PTT. In addition, radios such as the Kenwood NX700 have two transmit audio inputs (DI and MI2) with different sensitivities. So we recommend you consult your radio shop for these details before building a custom radio cable.

If you already have a radio interface cable for the NG or NG², it should work with the addition of a DSUB-15 gender changer and a cable clamp. A more robust solution is to replace your existing DSUB-15 male with a female connector using the same pin-wiring connections.

2300-375 Radio Male DSUB-15 Connector Pin-out

PIN	DESCRIPTION	NOTES
1	CHANNEL SELECT LOW BIT	RITRON DTX-160 ONLY; otherwise, do not connect
2	CHANNEL SELECT MID BIT	RITRON DTX-160 ONLY; otherwise, do not connect
3	CHANNEL SELECT HIGH BIT	RITRON DTX-160 ONLY; otherwise, do not connect
4	NOT CONNECTED	
5	CSN, CHANNEL SELECT	RITRON DTX-160 ONLY; otherwise, do not connect
6	REGULATED 12-VOLT OUTPUT	RITRON DTX-160 ONLY; otherwise, do not connect
7	TRANSMIT AUDIO OUTPUT	CONNECT TO TRANSMIT AUDIO INPUT OF RADIO (transmit audio level controlled by R34 of each NG², Figure 3)
8	NOT CONNECTED	
9	PROGRAMMING I/O FROM TRACK-1	RITRON DTX-160 ONLY; otherwise, do not connect
10	NOT CONNECTED	
11	NOT CONNECTED	
12	AUDIO INPUT	CONNECT TO LOW-LEVEL RECEIVE AUDIO OUTPUT FROM RADIO (used for DTMF decoding)
13	DCD INPUT ACTIVE-LOW	CHANNEL BUSY: CONNECT TO CARRIER-DETECT OUTPUT FROM RADIO (prevents detectors from talking at the same time)
14	PTT OUTPUT ACTIVE-LOW	CONNECT TO PUSH-TO-TALK INPUT OF RADIO (allows either detector to key the radio)
15	GROUND	COMMON GROUND

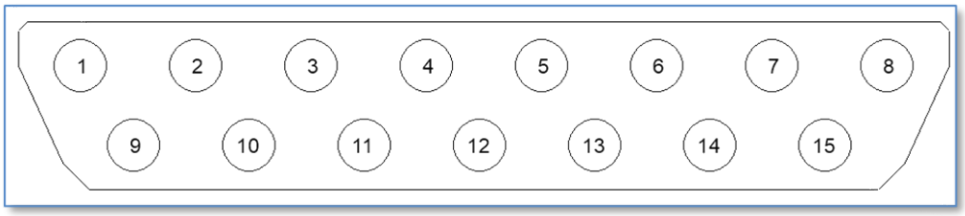

Figure 4 - Front view of the 2300-375 Dual Track Intreface Male DSUB-15 Radio Connector

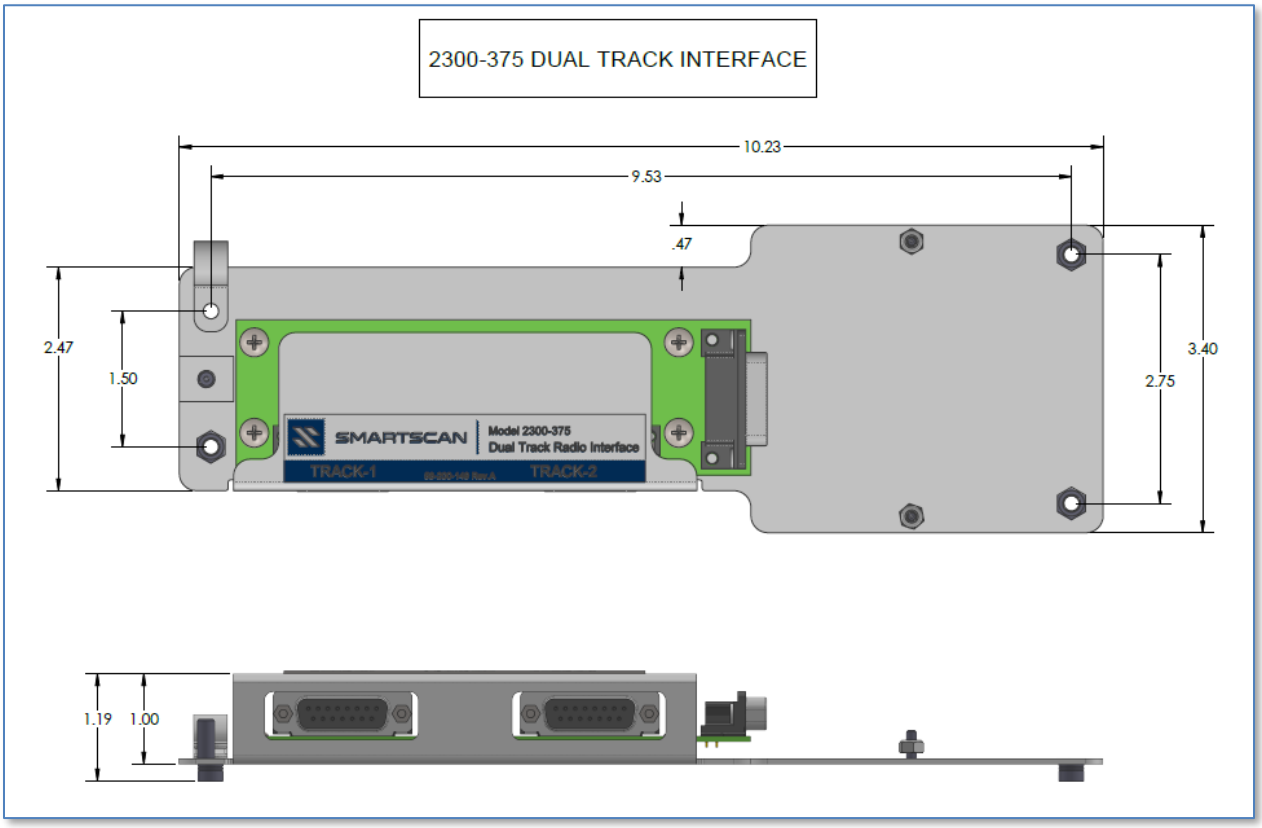

Figure 5 - Dimensional Drawing without Ritron Radio

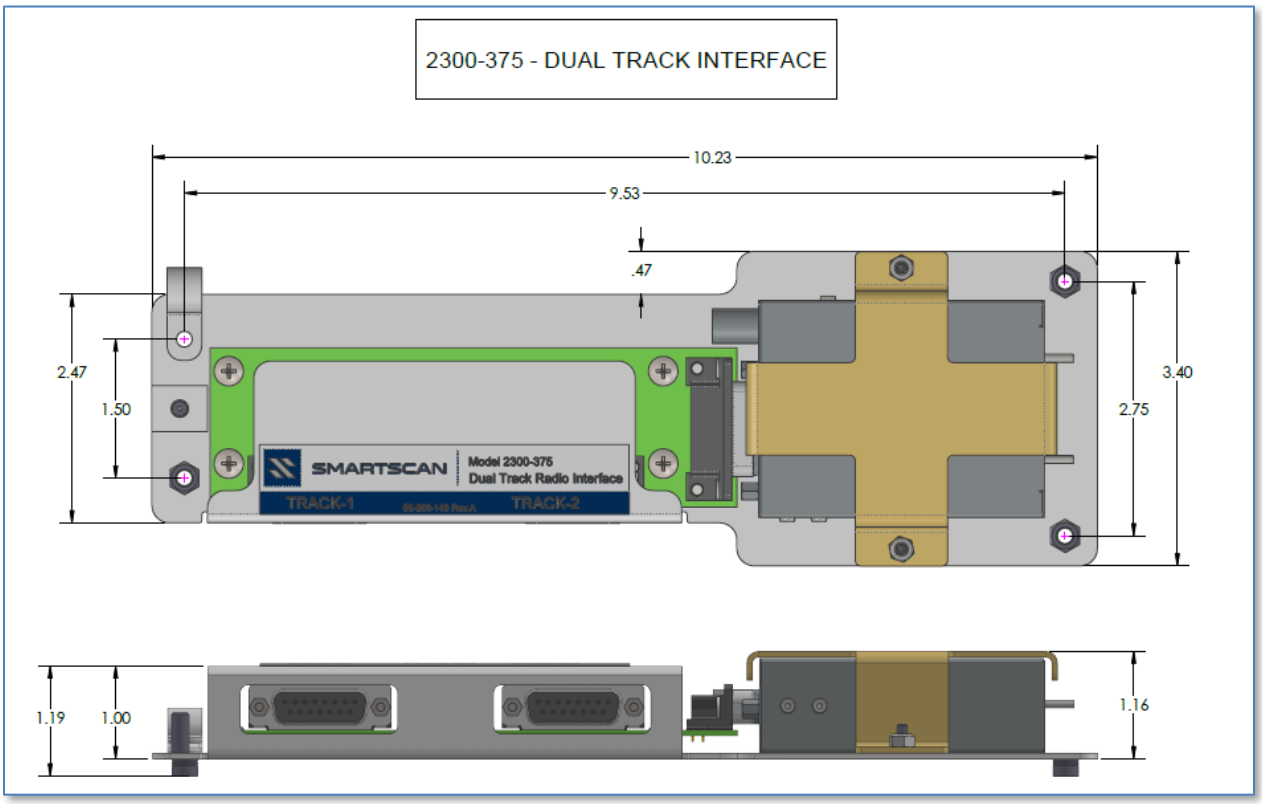

Figure 6 - Dimensional Drawing with Ritron Radio