Honeywell

TITAN™ RF PASS

NFPA 1981, 2018 EDITION COMPLIANT

Operation Manual Rev B

Revision History

Rev.	Date	Author	Description
A	12/21/2018	Steve Huseth	Initial draft
B	1/28/2019	Steve Huseth	FCC Updates

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter meets both portable and mobile limits as demonstrated in the RF Exposure Analysis. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC multi-transmitter product procedures. Honeywell has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Industry Canada Statements:

Under Innovation, Science and Economic Development (ISCD) Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by ISCD Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotopically radiated power (ERP) is not more than that necessary for successful communication.

This device contains license-exempt transmitter(s)/receiver(s) that comply with ISCD Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

TABLE OF CONTENTS

I. DESCRIPTION

The TITAN RF PASS provides the wearer with additional safety through continuous monitoring and communication with the incident commander. Using an advanced long range radio, the RF PASS is able to send air level, fault conditions, alarm status, and other sensor data to the incident commander and receive critical commands such as Personal Accountability Requests (PAR) and Emergency Evacuation.

The TITAN RF PASS meets all requirements of the NFPA 1982 Standard, 2018 Edition for Wireless PASS.

II. TITAN RF PASS OPERATION

The Telemetry radio communicates to a Base Station Host Radio connected to a standard Windows PC running either Windows10 or Windows7. The PC uses the Honeywell Safety Suite Responder software to monitor all active SCBAs at the incident and send commands and receive data from all Titan SCBAs containing the RF PASS that are operating at the incident.

The Titan 2018 SCBA will be connected to a standard PC through a wireless long range radio. The long-range radio reads the SCBA status and relays the information to the PC over a serial USB interface cable. It also accepts commands from the PC and informs the firefighter of commands such as PAR or evacuation alarm through audio and visual interfaces on the SCBA. The system organization is shown in Figure 1.
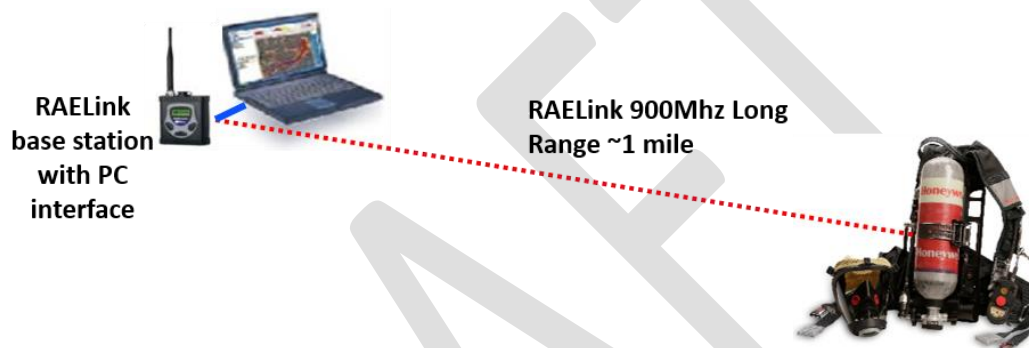

Figure 1: System Organization

The RF PASS consists of an RF Telemetry communications module integrated into the SCBA providing telemetry communication to the PC base station. In addition, the incident commander is able to send commands from the PC to the SCBA to provide the firefighter with additional direction.
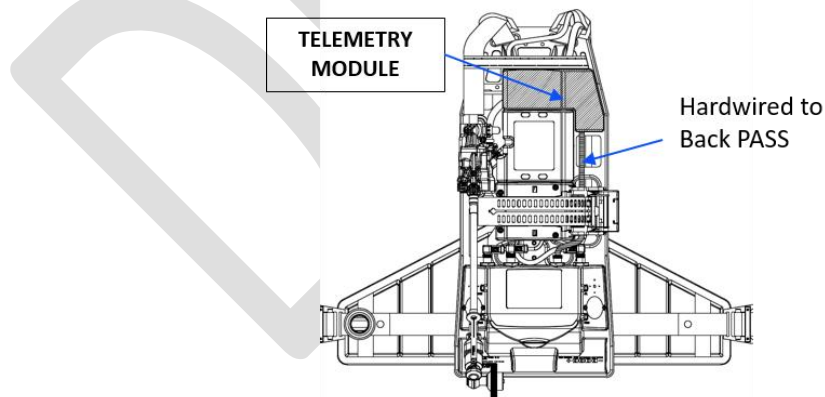

Figure 2: Titan SCBA Telemetry Integration

The Telemetry Module is integrated into the SCBA back frame and connected to the processing module in the Back PASS. This allows the telemetry module to receive data on the PASS status and the remaining air in the SCBA air cylinder. Control and information on the Telemetry operation is presented to the firefighter through the Auxiliary Telemetry Interface located near the front PASS.
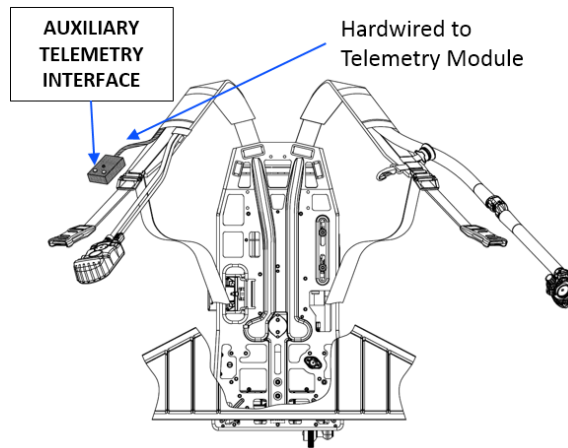
Figure 3: Auxiliary Telemetry Interface

Figure 4: Titan Telemetry

The Titan Telemetry module is mounted on the aluminum back frame behind the air cylinder. The batteries in the Telemetry module are designed for 15 hours of continuous operation. Batteries may be replaced by removing the set screw in the bottom of the Telemetry module as indicated in Figure 4. The battery holder must be removed for the batteries to be replaced.

The RF PASS is turned on and off by turning on or off the Titan SCBA. This is performed by turning on the air valve on the air cylinder or pressing the PASS button for 2 seconds. Similarly, the Titan RF PASS is turned off by shutting off the air cylinder, releasing the excess air pressure, then pressing the yellow signal button on the front pass twice. Additional information may be found in the Titan 2018 SCBA User's Manual.

Other than replacing batteries as discussed earlier, no user serviceable parts are in the Telemetry module. For service and repair, return the unit to the dealer or Honeywell Safety Products.

III. TELEMETRY AUXILARY MODULE OPERATION

The Auxiliary Telemetry Interface provides LED status indicators and a single button that can be pressed to acknowledge messages received from the Incident Commander.

Figure 5: RF PASS Auxiliary Module

The functions of the LEDs and signal button are described in the following section.

1. Auxiliary Module LED Indications and Button Functions

The following table outlines the functions of the LEDs and acknowledgement button on the Auxiliary Module.

Green LED	• Solid Green shows RF connection to Host radio is active • LED flashes indicates loss of connection
Red bi-color LED	• Flashing indicates emergency EVAC alarm (includes acoustic sound from BackPASS) • Continues to flash following acknowledgement button pressed. Acoustic sound stops. LED remains flashing until SCBA is shut down
Blue bi-color LED	• Flashing indicates PAR request (includes acoustic sound from BackPASS • Flashing and sound turn off after acknowledgement button pressed
Amber LED	• Short flash every 5 seconds indicates low telemetry battery while in sensing mode • Continuous flashing indicates waiting for RFID read. (only occurs after startup when Telemetry is in RFID read mode) • Short double flash on successful RFID read

2. RFID Reader

The Telemetry Module contains an RFID reader that is used to read in a unique firefighter ID for the firefighter using the SCBA and a second unique ID designating the team the SCBA has been assigned to. Each firefighter will be issued a firefighter RFID tag. Each equipment apparatus or designated team is also issued a unique RFID. The RFID contains a unique 64-bit code that can be read by the Telemetry Module. When the Telemetry Module starts up, an initialization message is sent by the telemetry module to the incident commander PC console containing both unique 64-bit ID for the firefighter and the team assignment. This is used by the PC software to present a readable name and team the firefighter is assigned to on Incident Commander Console. Equipment and firefighter 64-bit codes are retained in the SCBA until a new tag is read.

Figure 6: RFID Read Point

Firefighters should scan their tags into the SCBA at the start of the shift or when the SCBA is first used by the firefighter. Equipment tags should be read into the SCBA when the SCBA is installed on the apparatus or vehicle storage area.

The steps to read either the firefighter tag or equipment tag is defined as follows:

1. Start SCBA from sleep state.

2. Press and hold acknowledgement button on Telemetry Auxiliary Module for 2 seconds. Amber LED will start flashing indicating RFID reader has turned on and is waiting for RFID tag read. RFID reader function will only be available for 60 seconds after SCBA wakes from sleep state.

3. Place RFID tag on Telemetry Module reader icon as shown in Figure 6.

4. Amber LED flashes twice and stops flashing indicating read successful.

IV. INSTALLING THE SOFTWARE

The Responder software installer can be obtained from your Honeywell dealer and requires an Internet connection. Download the installer program onto your desktop and open the file. A Windows dialog may appears asking if you want to install the software. Select "Yes" and continue. The following screen will be presented
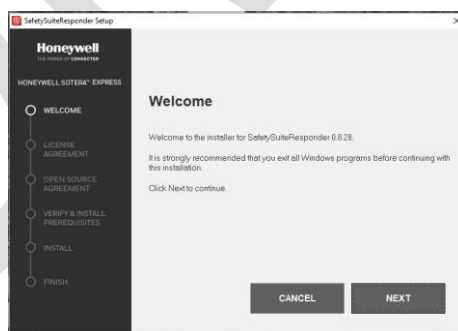

Figure 7: Installer Start Screen

The installer will lead you through several screens to setup and configure your computer. Windows MSSQL Express 2014 may also need to be installed if you don't already have that on your computer. If you are running Windows 7, .NET Framework 4.2 may also need to be installed. The installer program will install all the pre-requisites and install the Responder software. After the software has completed installing, a setup screen requesting selection of the radio channel and mesh IDs. Select the defaults if you have not been provided different values by your dealer.

V. TELEMETRY SOFTWARE OPERATION

To start the Safety Suite Responder PC Software, first connect the Host Radio Module to the USB serial cable with the round connector. Connect the cable to the PC using an available USB port. Start the Honeywell Responder software and the first screen should appear as shown in figure 8. The PC software automatically detects and connects to the Host radio through the USB port.
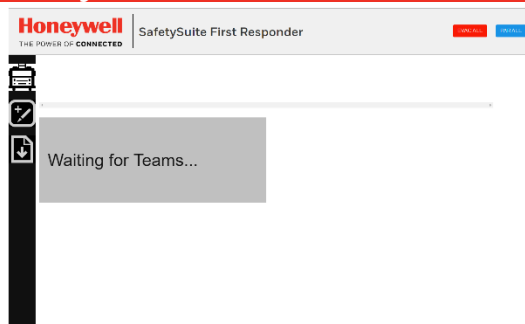
Figure 8: Responder Startup Screen

As the Titan SCBAs are pressurized, the Telemetry units power up and start communicating with the Responder software through the long-range radio and will begin appearing on the screen as shown in Figure 8. The screen shows firefighters and the teams the firefighters are assigned to. Selecting the team icon presents the list of firefighters and the status of each firefighter in the team. The air level displayed for the team is the least amount of air of any member in the team.
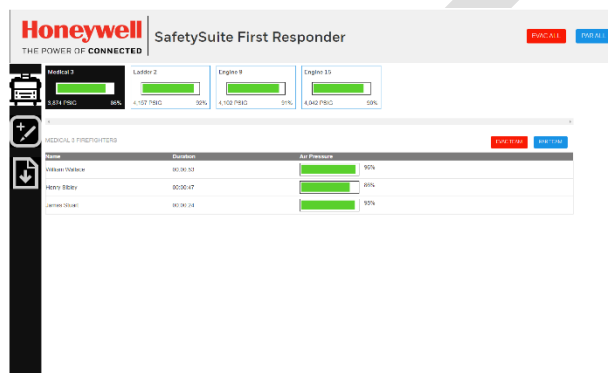

Figure 9: Responder Main Screen with Communicating SCBAs

Shutting off the SCBAs will remove them from the screen. When all SCBAs have been shut off, the screen will return to the startup screen indicating "Waiting for Teams".

3. Personal Accountability Report (PAR)

The RF PASS is designed to simplify PAR by selecting the blue PAR button for the team being displayed or the PAR All to request PAR from all firefighters at the incident. When the PAR button is pressed, an icon will be displayed with a timer showing the time since the PAR was issued. This sends a command to the SCBA Telemetry units where the fire fighter receives an audible and visual signal requesting a PAR response. Pressing the Acknowledgement button twice on the side of the Auxiliary Module sends a response to the incident commander and clears the PAR icon. The PC interface allows the incident commander to monitor for any firefighters that have not responded in a reasonable period of time and take additional action for those firefighters not responding.
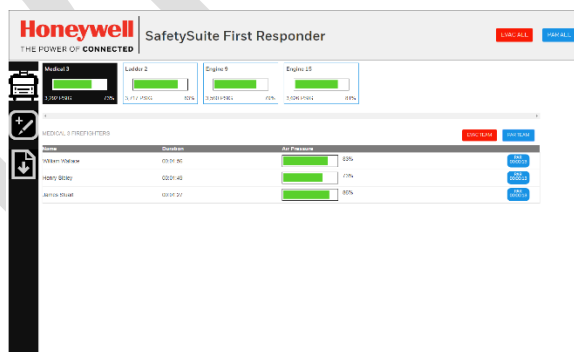

Figure 10: PAR indication

4. Loss of Communications

If a firefighter moves out of the range of the long range radio (approximately 1 mile open field), the firefighter through the RF PASS and the incident commander through the PC screen, will both be notified that communication has been lost. For the incident commander, a "Lost Comms" icon appears on the display as shown in Figure 11. For firefighters, the green LED on the Telemetry Auxiliary Module will start flashing. Once communications have been restored, the green LED will return to solid green and the "Lost Comms" icon will disappear from the PC display.
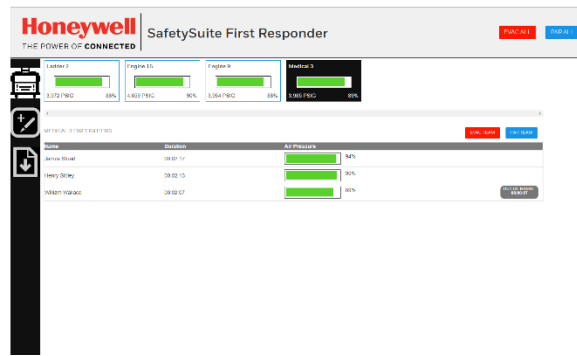
Figure 11: Loss of Communication

5. Emergency Evacuation

In the situation where the incident commander determines increased danger to a team of firefighters or all firefighters on the scene, the incident commander can issue the Evacuation Alarm by clicking on the "Evac" button for the team or "Evac All" for all firefighters. The Responder software will send commands to each of the telemetry units and provide a red LED indicator and an acoustic sound indicating the firefighter needs to evacuate the structure. The firefighter is expected to press the acknowledgement button on the Auxiliary module twice to silence the acoustic alarm and indicate to the incident commander the emergency alarm has been received. The red LED continues to flash reminding the firefighter to exit the structure. Turning off the SCBA and Telemetry unit will cancel the red flashing LED and indicate to the incident commander that the firefighter has successfully exited. As with PAR, the incident commander display shows all firefighter that have received the evacuation alarm and the time since the alarm was issued. When the firefighter presses the acknowledgement button, the red icon will be removed.
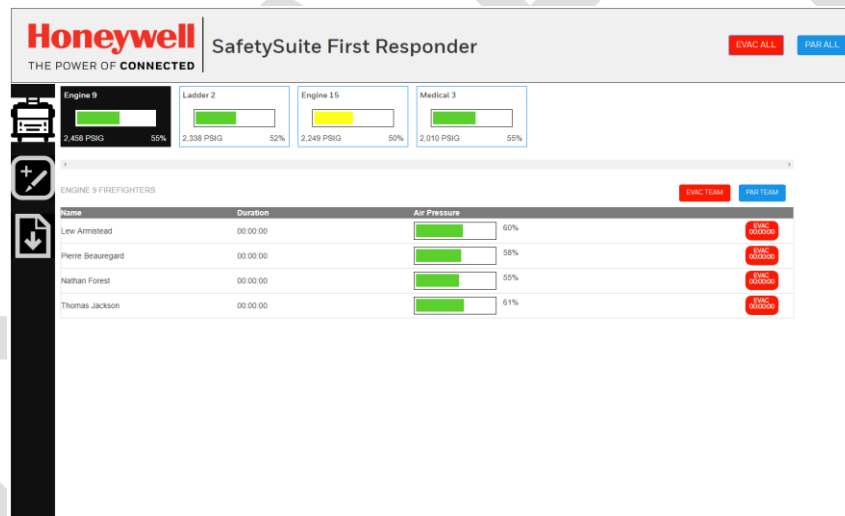

Figure 12: Emergency Evacuation Alarm

6. Panic and Man-down Alarms

Should a firefighter become injured or incapacitated, the man-down and panic alarm may be initiated on the SCBA. When this occurs, the telemetry module sends the alarm to the incident commander identifying the firefighter as shown in Figure 13 & 14. The alarm remains on the incident commander's screen until the alarm is cancelled on the SCBA front PASS or the SCBA is turned off.
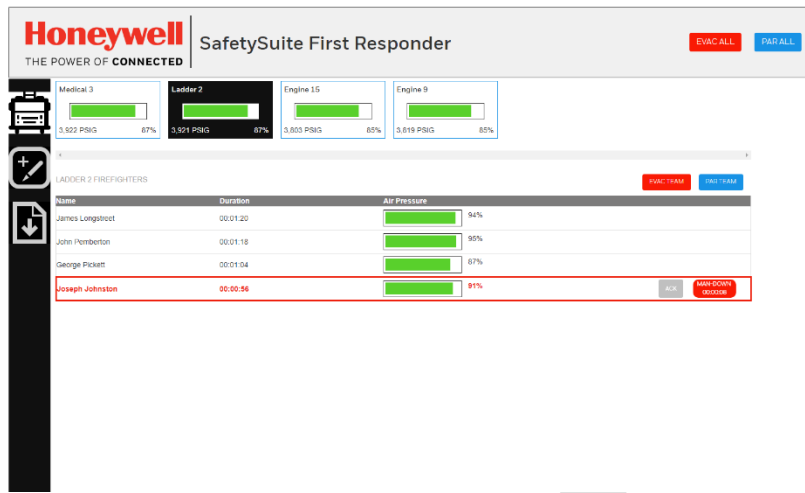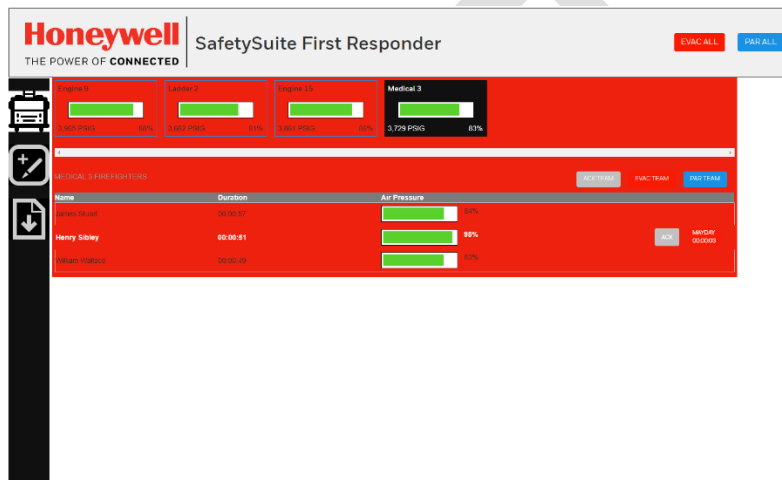
Figure 13: Man-down Alarm

Figure 14: Panic Alarm

VI. ADDITIONAL INFORMATION

If you need assistance or additional information on any Honeywell product, contact a Honeywell Safety Products representative.

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