



USER'S HANDBOOK

HEAD-OF-TRAIN DEVICE (HOT OR HTD), MODEL Q3467/V3467

April 2013 (Revised June 2014)

DOCUMENT NO. OBE-00-09-15
VERSION B.2



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2400 NELSON MILLER PARKWAY
LOUISVILLE, KENTUCKY 40223
TELEPHONE: (502) 618-8800
FAX: (502) 618-8810
SALES & SERVICE: (800) 626-2710
WEB SITE: <http://www.rail-automation.com/>

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939 S. MAIN STREET
MARION, KENTUCKY 42064
TELEPHONE: (270) 918-7800
CUSTOMER SERVICE: (800) 626-2710
TECHNICAL SUPPORT: (800) 793-7233
FAX: (270) 918-7830

FCC RULES COMPLIANCE

The equipment covered in this manual has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

NOTES, CAUTIONS, AND WARNINGS

Throughout this manual, notes, cautions, and warnings are frequently used to direct the reader's attention to specific information. Use of the three terms is defined as follows:

WARNING

WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY. WARNINGS ALWAYS TAKE PRECEDENCE OVER NOTES, CAUTIONS, AND ALL OTHER INFORMATION.

CAUTION

CAUTION

REFERS TO PROPER PROCEDURES OR PRACTICES WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN A POTENTIALLY HAZARDOUS SITUATION AND/OR POSSIBLE DAMAGE TO EQUIPMENT. CAUTIONS TAKE PRECEDENCE OVER NOTES AND ALL OTHER INFORMATION, EXCEPT WARNINGS.

NOTE

NOTE

Generally used to highlight certain information relating to the topic under discussion.

If there are any questions, contact Siemens Industry Inc., Rail Automation Application Engineering.

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REVISION HISTORY

Rev.	Date	Author	Description
A	12/2009	DLW	Initial Release
B	11/2012	DLW	<ul style="list-style-type: none">• Page 2, added two bullet points to end of Features section covering Support for Dual-Pipe EOTs and Carry Handle.• Page 5, OPERATION section – added section covering DUAL-PIPE EOT OPERATION• Converted to Verdana font for readability on remote devices.
B1	4/2013	DLW	<ul style="list-style-type: none">• Added V3467 part number• Title page and page 3, inserted new photos of unit with handle.
B.2	6/2014	TP	Change to Siemens branding

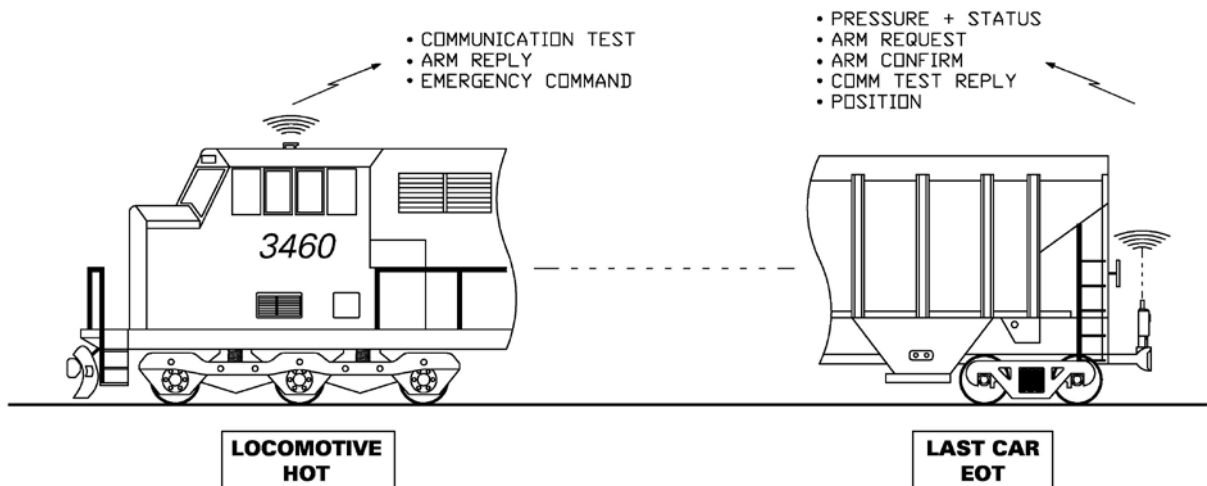
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1.0 INTRODUCTION AND PRODUCT FEATURES

The Siemens Q3467/V3467 Head-of-Train Device (HOT or HTD), when used with an End-of-Train Device (EOT or ETD), provides the locomotive engineer with information regarding conditions that are important to the operation of the train. These conditions include brake pipe pressure (PSI) and various status conditions. The status indications include:

- Arming status [emergency feature enabled/disabled]
- Communication status [good/comm-loss, rear-to-front or front-to-rear]
- motion detection [moving/stopped]
- highly visibility marker (HVM) [on/off/defective]
- brake valve [normal/emergency/defective]
- battery status [good/low/dead]
- battery charge [percent depleted, in charge units]

The Q3467/V3467 also processes EOT/HOT communications tests and arm requests.



The unit supports the AAR standard protocol on the frequency pairs of 457.9375 MHz and 452.9375 MHz.

1.1 Features of the Q3467/V3467 Head-of-Train Device

- **Interchangeability** – The Q3467/V3467 is a direct mechanical and electrical replacement for the US&S Digitair model 6696 HOT.
- **12-Digit Key Pad** – The key pad is used to allow easy entry of the EOT marker ID number, adjust the front panel display illumination level, and enter the locomotive wheel size.
- **Accelerometer/Odometer** – A 4-1/2 digit LED display is provided to display locomotive acceleration. The odometer function, accessible by a push button on the front panel of the Q3467/V3467, displays +/-19,999 feet of movement. True net distance is calculated and based on the locomotive reverser handle position.

- **16-Character Display** – The 16-character display provides "plain text" messages regarding the state of communication between the HOT and EOT marker. The display is also used to prompt the operator for a new EOT marker ID and display information regarding the wheel size setting and axle drive type (20/60 Pole) configuration.
- **Internal Event Recorder** – The Q3467/V3467 provides an internal event recorder for the last 1600 HOT/EOT events. The data is accessible via a portable computer and the communication port located on the rear panel.
- **External Event Recorder** – The Q3467/V3467 is equipped with an event recorder communication port. The HOT sends the information using industry standard protocols; therefore, event recorders from other manufacturers can also be connected to the unit.
- **Modular Design** – The Q3467/V3467 is designed using modular components that allow maintenance personnel to quickly make routine inspections, test the radio, and effect repairs.
- **Support for Dual-Pipe EOTs** - The Q3467/V3467 can communicate with the Siemens R3930 Dual-Pipe EOT, as well as with older US&S EOTs provisioned for dual-pipe operation. The secondary pressure is displayed on the alphanumeric display along with other items of information. If desired, the user can enable/disable continuous visualization of the secondary pressure.
- **Carry-Handle** - The Q3467/V3467 HOT comes equipped with a folding carry-handle, mounted on the right side of the unit, to facilitate handling / transporting when not mounted in the locomotive.

1.2 Installation

1.2.1 Mounting the Q3467/V3467

The Q3467/V3467 HOT is a direct replacement for the US&S head of train device and therefore is installed in the existing location.

1.2.2 Power/Locomotive Interface Cables

The Q3467/V3467 uses the existing cables for the US&S installation. The pin outs for these rear panel connectors are provided in the tables below.

AXLE DRIVE CONNECTOR PIN	SIGNAL	NOTES
A	AXLE1	AXLE DRIVE SIGNAL INPUT
B	FORWARD	Trainline 8
C	REVERSE	Trainline 9
D	20/60 SELECT	20/60 POLE SELECT **
E	20/60 SELECT	20/60 POLE RETURN **
F	AXLE2	AXLE DRIVE SIGNAL RETURN
** FOR 20 POLE, INSTALL JUMPER BETWEEN PINS D AND E. FOR 60 POLE, REMOVE JUMPER BETWEEN PINS D AND E.		

POWER CONNECTOR PIN	SIGNAL	NOTES
A	BP	LOCOMOTIVE POWER
B	12VDC	MOBILE POWER
C	BN	LOCOMOTIVE POWER RETURN
D	12VDC RETURN	MOBILE POWER RETURN
E	CHASSIS	NOT USED

1.2.3 UHF Antenna

One type PL-259 female connector is provided for the connection of an external antenna.

1.2.4 Serial Port

The rear of the unit also has a connection for download of the internal event recorder. The same connector is also used to connect the HOT to an external event recorder for recording of HOT/EOT activity. Please reference drawing C3467, located in the drawings section of this service manual, for connection information between the Q3467/V3467 HOT and an event recorder.

1.2.5 Front Panel

Controls for the user include three push buttons (COMM TEST/ARM, MENU, and COUNT/HOLD/ DONE for accelerometer/odometer functions), a guarded emergency EOT switch, and a 12-button keypad.



FRONT VIEW



REAR VIEW

1.3 Configuration

Locomotive-dependent configuration of the Q3467/V3467 series of Head-of-Train devices is limited to adjusting the wheel size setting to match the locomotive wheel size. The default wheel size setting, as shipped from Siemens, is 38.5" diameter.

NOTE

NOTE

Axle drive type selection (20/60 ppr) is accomplished via an external jumper in the AXLE DRIVE cable harness.

1.4 Adjusting the Wheel Setting

Press the MENU push button on the front panel three times. The 16 character alphanumeric display should indicate WHEEL = XX.X 20P (XX = inches, .X = tenths of an inch, 20P indicates 20-pole axle drive, or 60P indicates 60-pole axle drive)

Enter the wheel diameter in inches and tenths of an inch, using the numeric keypad. The range of wheel size (diameter) supported by the Q3467/V3467 is from 36.0 to 52.0 inches.

Press the ENTER/YES key on the numeric keypad.

The setting is now stored in non-volatile memory.

2.0 OPERATION

2.1 Power-up Sequence

Upon power-up, the unit will light all status indicators, all digits in the rear pressure display, and display Siemens for a few seconds in the status display. The status display will change to Q3467/V3467: xxxxx-Z for a few seconds, where xxxxx is the program part number and Z is the version (e.g., 16960-B). Then, the unit will enter normal operating mode.

NOTE

NOTE

If the unit was last linked to an EOT, it will attempt to contact that EOT. If the unit was not linked to an EOT, the status display will show 00000 DISARMED.

2.2 Disarming the Q3467/V3467 HOT

To disarm the Q3467/V3467 HOT, press the Menu button once, and the status display will show Enter EOT# nnnnn (where nnnnn is the current EOT number entered). Press the CLEAR/NO button to clear the EOT number and then press the ENTER/YES button to accept. Alternately, enter "00000" and then press the ENTER/YES button to accept. The "EMERG DISABLED" indicator on the front panel of the Q3467/V3467 HOT will be illuminated.

2.3 Linking the Q3467/V3467 HOT to an EOT

Press the Menu button once. The status display should change to Enter EOT# *****. Enter the EOT marker number and then press the ENTER/YES button on the numeric keypad. The Q3467/V3467 will display the EOT number entered and "DISARMED" in the 16-character display. The "EMERG DISABLED" indicator should be illuminated. The Q3467/V3467 will monitor and display messages received from the EOT.

2.4 Performing a Communication (COMM) Test

Once the EOT marker number is entered, a COMM test can then be performed by pressing the COMM TEST/ARM button. The Q3467/V3467 HOT will transmit a COMM test message to the EOT. Results (COMM TEST PASS or COMM TEST FAIL) are displayed on the 16-character alphanumeric display. EOT status information regarding rear pressure, marker light, and EOT motion will be displayed. It is recommended that a successful COMM test should be completed before attempting to arm the Q3467/V3467 to an EOT device.

2.5 Arming the Q3467/V3467 HOT to an EOT

Once a successful COMM test is completed, the EOT system can be armed for 2-way operation. The arming sequence is initiated from the EOT device by pressing the arming button on the EOT. When the EOT transmits a request to arm message, the Q3467/V3467 HOT device will display "xxxxx * ARM NOW *" (xxxxx is the EOT number) on the alphanumeric display. Press the COMM TEST/ARM button on the front panel of the Q3467/V3467 to arm the HOT system. When armed, the HOT will display "xxxxx * ARMED *". The "EMERG ENABLED" indicator on the front panel of the Q3467/V3467 HOT will be illuminated. Two-way communication is established.

2.6 Dual-Pipe EOT Operation

The Q3467/V3467 HOT will enter dual-pipe compatibility mode if/when it receives the additional secondary pipe pressure information from the EOT it is armed with. In dual-pipe mode, the HOT will periodically show the secondary pressure on the alphanumeric display (along with other information that is cycled on the display). The secondary pressure display format is "Secondary: XXX", where XXX is the pressure sent by the EOT.

In dual-pipe operation the Q3467/V3467 HOT is compatible with older US&S Digitair dual-pipe EOTs as well as with the dual-pipe version of the Siemens EOT (R3930). If required, the user can force the secondary pressure to remain visible on the display by pressing the "1" key for approximately 3 seconds. The normal cycling of messages on the alphanumeric display will resume when the user presses the "1" key for 3 seconds again. If the HOT does not receive secondary pressure values from the dual-pipe EOT it is armed with for 10 minutes, the secondary pressure will be displayed as "Secondary: ???".

3.0 FUNCTIONAL TESTING

A functional EOT unit is required for these tests.

3.1 Mounted on a Locomotive

Set up the EOT unit.

Apply power to the Q3467/V3467. Upon power-up the unit will light all status indicators, all digits in the Rear Pressure display, and display Siemens for a few seconds in the status display. The status display will change to Q3467/V3467: xxxxx-Z for a few seconds, where xxxxx is the program part number and Z is the version (e.g., 16960-B). Verify that the program part number and version are the current release. At the end of this 3 second display, the unit will assume the operating mode. If the unit was last linked to an EOT, it will attempt to contact that EOT. If the unit was not linked to an EOT, the status display will show 00000 DISARMED.

If necessary, disarm the HOT unit. To disarm, press the Menu button once. The status display will show Enter EOT# nnnnn (where nnnnn is the current EOT number entered), press the CLEAR/NO button to clear the EOT number and then press the ENTER/YES button to accept. Wait until the displays quit flashing (approximately 10 seconds) before proceeding to the next step.

Verify that the following status lights are lit at this time: HVM OFF; STP (stopped); COMM LOSS; EMERG. DISABLED. The Rear Pressure should display 0 (zero) and the status display should read 00000 DISARMED.

Press the Menu button once, and the status display should change to Enter EOT# *****. Press in sequence the number keys 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0. Verify on the status display that each number can be entered and that there is a beep from the unit for each key pressed (the beep happens on the key release). This verifies that the keypad is functional.

Press the Menu button again. The status display shows the brightness level being used. There are four levels of brightness; press the keypad buttons 1 - 4 to test each of the brightness levels. Set the brightness to the desired level.

Press the Menu button again. The status display shows the beeper volume level. Volume level 1 is low volume and volume level 2 is high volume.

Press the Menu button again. The status display shows the unit's current wheel size (diameter) and the axle drive pole (20P/60P) configuration. Verify all data displayed is correct.

Press the Menu button again. The alphanumeric display should indicate the following: HOT# XXXXXXXXX, where XXXXXXXXX is the product serial number.

Press the Menu button once again and the status display will return to the "normal" operational status display.

Press the Menu button once and then enter the test EOT number using the keypad. When the number has been entered, press the ENTER/YES button.

To arm the Q3467/V3467 HOT, the button on the EOT will have to be pressed, as described in the Operation section above, "Arming the Q3467/V3467 HOT to an EOT". When the EOT has been successfully armed, the Q3467/V3467 will light the EMERG ENABLED status light. The far-right display character in the status display is used to provide a visual indication of message transmissions to/from the HOT. The diamond character (◇) will be displayed when the HOT is transmitting. The hourglass character will be displayed when a valid transmission is received from the selected EOT. Both characters are displayed only for approximately 1 second.

With the EOT now armed to the Q3467/V3467, activate the EMERGENCY switch.

Information transmitted by the EOT will be displayed on the HOT. All display combinations need not be tested. The lighting of all displays at power-up provides a visual check to ensure that the appropriate displays will light when an EOT status message is received by the unit.

Push the COUNT/HOLD/DONE button on the front panel of the Q3467/V3467 HOT. The accelerator/odometer indicator should display "0". Move the locomotive reverser handle to either the forward or reverse positions. If safe to do so, move the locomotive while observing the odometer. The odometer should increment, indicating the total distance traveled in feet. Stop the locomotive and move the reverser handle in the opposite direction. Move the locomotive again, observing the odometer. The odometer should now decrement. If the odometer performs as described in the steps above, both the reverser (8T and 9T) and the axle drive connections have been successfully tested. If the odometer fails to perform as described, check the reverser and axle drive connections and repeat the test sequence.

When the tests are complete, unlink the unit by pressing the Menu button once to get the Enter EOT # nnnnn display. Press the CLEAR/NO button to clear the EOT number and then press the ENTER/YES button to accept the entry.

3.2 Ritron Telemetry Radios

The radio used in the Q3467/V3467 is a DTX-Plus radio transceiver (part number DTX-454-OBN9L) manufactured by Ritron, Inc. Ritron may be reached at:

Ritron Inc.
Attn: sales department
505 West Carmel Drive
Carmel, IN 46032
Phone: 800-872-1872
Fax: 800-251-7329
Website: www.ritron.com

The DTX-Plus radio is a synthesized telemetry radio. Frequency settings are made through the use of a software program and cable which is available from Ritron (part number DTX-PCPK 2.0). The cable must be modified as follows.

3.2.1 Modification to Ritron programmer kit

The DTX-PCPK Programmer Kit cable requires that three wires and a push-button switch be added to allow signals to be monitored during service. The cable has two connectors: a DB-25 female (with DB-25 to DB-9 adapter) for attachment to the host PC, and a DB-15 male for connection to the radio-under-test. All test point wires are to be added to the DB-15.

Attach an 8" length of BROWN wire (22 gauge) to pin-5 of the DB-15 connector. This is the output power (hi/low) selection to the transmitter.

Attach an 8" length of WHITE wire (22 gauge) to pin-7 of the DB-15 connector. This is the "Aux-In" signal to the transmitter.

Attach an 8" length of BLUE wire (22 gauge) to pin-12 of the DB-15 connector. This is the "Audio-PA-Out" signal from the receiver.

Add a normally-open pushbutton switch for PTT between pins 14 (PTT) and 15 (Gnd) of the DB-15 connector.

3.2.2 Ritron Radio Summary

Radios obtained from Siemens (QPN 59019/RIT) are factory set for the required operating parameters, including frequency, transmit deviation limit, and audio output level. These settings are preset and only need to be verified when the radio is serviced. The following are the settings that should be checked (or set for non-Siemens radios).

Transmitter frequency for all channels should be 452.9375 MHz.

Receiver frequency for all channels should be 457.9375 MHz.

Mic Mute	Mute		
Squelch Type	RSSI		
Tx Pre- emphasis	Flat		
Rx De-emphasis	Flat		
Audio PA Sidetone	Off	Aux In (Tx) Gain	63
Busy Channel lockout	Off	Aux Out (Rx) Gain	##
CSN Input	Hi/Lo Power	Carrier Detect On	110
Squelch Enable	Never Mute	Carrier Detect Off	115
PTT Input level	Active	LowTx Frequency Trim	#
DCD Output level	Active High	Rx Frequency Trim	#
CTS Output level	Active High	Audio PA Gain	#
TX Timeout Timer	20 sec	Rx Discriminator Coupling	AC

NOTE

NOTE

Items marked above with a "#" or "##" are individually set and adjusted as required, and are described in the following procedures.

Ritron RF Telemetry- The Wireless ConnectionSM

Features

- Narrow band (12.5 kHz) or wide band (25 kHz) models
- Broadband TX/RX design: 26 MHz VHF, 20 MHz UHF
- 6 Watt (VHF) and 3/6/10 Watt (UHF) models
- Frequency ranges:
 - 136-162 MHz VHF
 - 148-174 MHz VHF
 - 400-420 MHz UHF
 - 450-470 MHz UHF
- Compact size (only 3.6" L x 2.3" W x 1.0" H)
- Frequency stability standard @ 1.5 ppm for fixed applications
- Ultra fast TX/RX attack times
- Controlled EnvelopeSM TX keying
- Dual Transmit and Receive Audio paths
- Meets FCC and IC (Canada) standards**
- Programmable Electronic settings and adjustments
- Programmable High/Low Output Power
- SMD Component Design
- Custom frequency ranges available
- Made in the USA

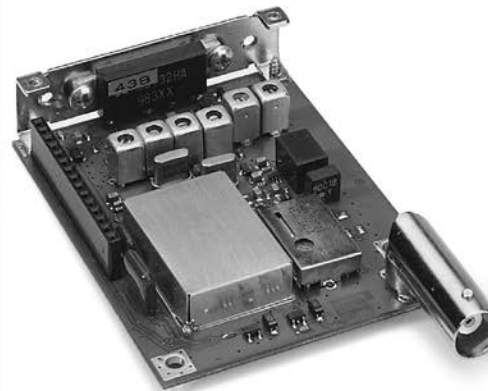
The DTX Plus Series is ideal for any system design where high performance RF specifications, fast TX/RX attack times, and compact size are a requirement. High specifications permit integration into systems demanding the utmost performance in congested frequency environments.

This compact design makes the DTX Plus Series perfect as a retrofit to RNet and JSLM installations. Direct modulation with low distortion and low group delay result in a low bit-error-rate (BER) for enhanced system integrity and reliability. The Swift LockSM synthesizer-loading algorithm reduces unit turn-on-time to less than 15ms for high-speed data throughput rates and Controlled EnvelopeSM keying reduces adjacent channel "keyclicks" resulting in spectrum-friendly operation.

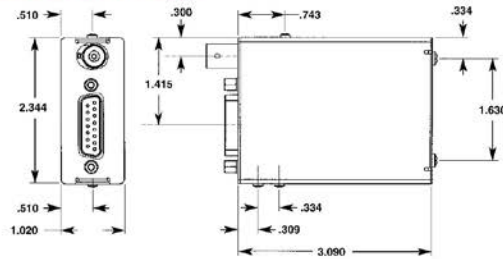
Capable of half- and full-channel spacing operation, the DTX Plus Series can be installed in systems where refarming compliant narrow band frequencies have been assigned.

If dependability, reliability, and low-cost are important factors in your RF Telemetry requirements, call RITRON at 800-USA-1-USA.

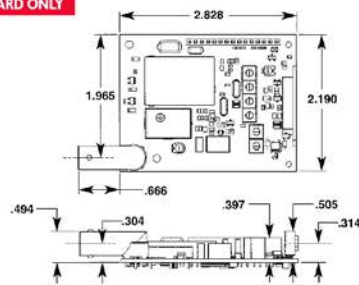
Small, rugged, and dependable synthesized RF transceivers for OEM or end user applications.....


RITRON

RF and CTRL BOARD MODULE



RF BOARD ONLY



Dimensions shown in inches

AVAILABLE MODELS:

DTX Plus Module

Model	Frequency
DTX-154-G	136-162 MHz
DTX-154-O	148-174 MHz
DTX-454-G	400-420 MHz
DTX-454-O	450-470 MHz

DTX Plus RF Board

Model	Frequency
DTX-154-G-DD	136-162 MHz
DTX-154-O-DD	148-174 MHz
DTX-454-G-DD	400-420 MHz
DTX-454-O-DD	450-470 MHz

Various power and voltage options are available. Please contact the Ritron Sales Department for your specific requirements.

DTX PLUS SPECIFICATIONS

GENERAL

	VHF	UHF
FCC Identifier	AEERT12-150	AEERT11-450
Number of Channels	8	8
TX/RX Spacing (w/in frequency range)	26 MHz max	20 MHz max
Mode of Operation	Simplex or Half Duplex	
Channel Increment (Synthesizer step size)	2.5 kHz	5/6.25 kHz
Emissions Bandwidth		
Narrow Mode	11 kHz	11 kHz
Wide Mode	16 kHz	16 kHz
Frequency Stability (-30° to +65° C)	1.5 ppm	1.5 ppm
Supply Voltage (VDC)		
3 and 6 watt versions	7.5 or 11-16 w/internal regulator	
10 watt version	11.5 to 15	
RF Input/Output Connector	BNC	BNC
Power/Data Interface	15 pin subminiature D type	
Operating Temperature	-30° to +65° C	-30° to +65° C
Maximum Dimensions (L x W x H)	3.6" x 2.3" x 1.0"	
Weight	6 oz	6 oz

Dependable, reliable, and low-cost synthesized RF transceivers for OEM or end user applications.....

TRANSMITTER

	VHF	UHF
Operating Bandwidth	26 MHz	20 MHz
RF Output Power	1-3, 1-6, or 1-10 watts depending upon model	
Duty Cycle	5 to 100 % depending upon power and temperature	
RF Load Impedance	50 ohms	50 ohms
Audio Distortion	≤5% max	≤5% max
Modulation Frequency Response	(+/-3 dB ref 1 kHz)	
At MIC IN (w/ pre-emphasis curve)	50 Hz-2500 Hz	50 Hz-2500 Hz
At AUX IN (w/o pre-emphasis)	50 Hz-2700 Hz	50 Hz-2700 Hz
Transmitter Attack Time:	≤15 ms	≤15 ms
Spurious and Harmonics:	≤-20 dBm	≤-20 dBm
FM Hum and Noise		
12.5 kHz channel operation	≥40 dB	≥40 dB
25 kHz channel operation	≥45 dB	≥45 dB
Current Drain		
1 watt	≤1.0 A	≤1.0 A
6 watt	≤2.4 A	≤2.4 A
10 watt version (13.7 VDC supply)	N/A	≤2.4 A

RECEIVER

	VHF	UHF
Operating Bandwidth	26 MHz	20 MHz
Sensitivity		
(I2 SB40 w/ de-emphasis)	≤0.28 uV	≤0.28 uV
RF Input Impedance	50 ohms	50 ohms
Adjacent Channel Selectivity		
+/- 12.5 kHz w/narrow IF	≥60 dB	≥60 dB
+/- 25 kHz w/wide IF	≥70 dB	≥70 dB
Spurious and Image Rejection	≥70 dB	≥70 dB
Intermodulation Rejection	≥70 dB	≥70 dB
FM Hum and Noise		
12.5 kHz channel operation	≥40 dB	≥40 dB
25 kHz channel operation	≥45 dB	≥45 dB
Conducted Spurious	≤-57 dBm	≤-57 dBm
Receive Attack Time	≤15 ms	≤15 ms
Noise Squelch Attack Time	≤13 ms	≤13 ms
RSSI Squelch Attack Time	≤5 ms	≤5 ms
Audio Distortion	≤5%	≤5%
Audio Response at AUX OUT		
12.5 kHz channel operation	100 Hz to 3.5 kHz	100 Hz to 3.5 kHz
25 kHz channel operation	100 Hz to 5 kHz	100 Hz to 5 kHz
Receive Current Drain	≤80 mA	≤75 mA

DTX-154/454 INPUT/OUTPUT CONNECTOR

Pin #	Name	Description	Pin #	Name	Description
1	CS0	Channel Select low bit	8	AUX OUT	Auxiliary Output
2	CS1	Channel Select mid bit	9	PCN IN/OUT	Programming I/O
3	CS2	Channel Select high bit	10	CTS	Clear to Send
4	MIC IN	Microphone Input	11	RX MON	Monitor
5	CSN	High/Low Power or Channel I/2	12	AUDIO OUT	Audio PA Output
6	RAW SUPPLY	Power Supply Input	13	DCD	Carrier Detect
7	AUX IN	Auxiliary Input	14	PTT RTS	Push to Talk
			15	GND	Ground

*IC approval pending as of this printing

Specifications subject to change without notice. Specifications are typical for most qualifications using good RF propagation and installation practices. Ritron is a trademark of Datasat, Inc.



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PN 14610C

4.0 MAINTENANCE

FRA Code of Federal Regulations, 49CFR232.409 (d), as of October 1, 2002, requires that:

The telemetry equipment shall be tested for accuracy and calibrated if necessary according to the manufacturer's specifications and procedures at least every 368 days. The 368 days shall not include a shelf-life of up to 92 days prior to placing the unit in service. This test shall include testing radio frequencies and modulation of the device. The date and location of the last calibration or test as well as the name of the person performing the calibration or test shall be legibly displayed on a weather-resistant sticker or other marking device affixed to the outside of both the front unit and rear unit. [...]

There are no components in the Q3467/V3467 which require annual calibration. Radio modules themselves are subject to FCC requirements, but do not explicitly require annual inspection. Additionally, the Ritron radio transceiver inside this product was granted an FRA waiver (FRA-2009-0015), and is therefore exempt from the requirements of 49CFR232.409 (d) listed above.

Verification of radio transceiver performance may be done on-locomotive with the use of an Siemens Q3430, Q3431 or Q3433 tester. This verification does not need to be performed by an electronics technician. Failure of any verification step, as indicated on the Q3430 or Q3431 tester, requires that the Q3467/V3467 HOT be serviced by a qualified technician.

5.0 WARRANTY AND REPAIR

To obtain expedited warranty claim service, expedited repair service, or if special shipping arrangements are required for the return of any Siemens product, please contact Siemens Industry, Inc., Rail Automation to obtain a Return Material Authorization (RMA#).

5.1 Warranty Policy

All Siemens equipment, excluding credit card memory or other similar devices that already carry a manufacturer's warranty, is warranted against failure due to materials or workmanship, for a period of two (2) years commencing on the month of manufacture. Replacement parts are warranted for a period of one (1) year, excluding customer-supplied material. Siemens will repair or replace, at our discretion, all defective material returned prepaid to our factory in Marion, Kentucky. The equipment will be fully repaired and tested to the original equipment specifications. Equipment will be returned at the equipment owners' expense with the existing warranty in effect.

To determine the duration of the warranty period for Siemens equipment, refer to the warranty sticker on the product, or consult the factory.

5.2 Repair Policy

Equipment must be shipped to the address provided below. Equipment which has exceeded the warranty period must be shipped freight pre-paid to our factory, unless other arrangements have been previously negotiated. Repair charges will be estimated and charged upon determination of the extent of damage, current costs of parts, and labor. Return shipping is the responsibility of the equipment owner and will be charged accordingly.

Return all equipment to:

Siemens Industry, Inc.
Field Repair Department
939 S. Main St
Marion, KY 42064, USA

6.0 DRAWINGS

The following lists all applicable Siemens drawings and their corresponding revision levels for the Q3467/V3467 Head-of-Train Device. These drawings are included in this manual.

<u>Drawing</u>	<u>Description</u>	<u>Revision</u>
C3467	Head of Train Device	A

REV	DATE	ECO	DESCRIPTION	DRN	CHKD	PLNG	APPD
		6480					

CONNECTOR WIRING

3	TX (TO REC)
2	RX (FROM REC)
7	REC COMMON
1	CHASSIS

POWER

A	BP
B	+13.6 VDC
C	BN
D	+13.6 VDC RETURN
E	CHASSIS

AXLE DRIVE

A	AXLE 1
B	FORWARD
C	REVERSE
D	20/60 POLE SELECT (SEE NOTE 1)
E	
F	AXLE 2

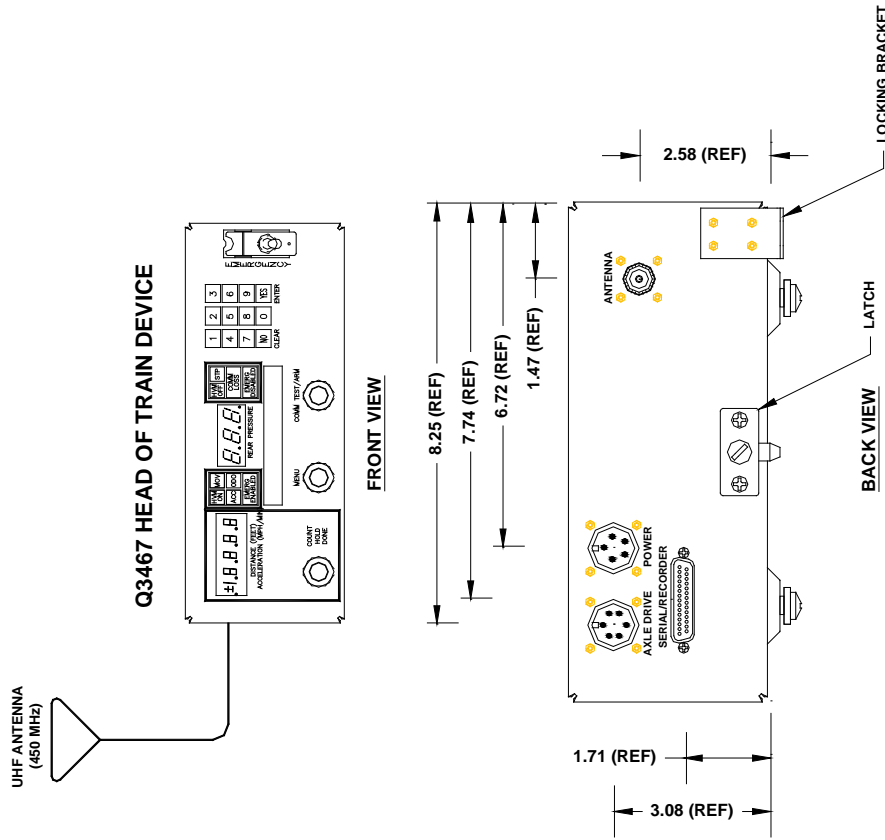
PANEL CONNECTORS

SERIAL RECORDER	DB-25 FEMALE
POWER	CA20COM-E14S-8P-B (ITT)
AXLE DRIVE	CA20COM-E14S-8P-B (ITT)
ANTENNA	PL-259 FEMALE

- NOTES:**
- FOR 20 POLE, JUMPER PINS D AND E.
 - FOR 60 POLE, LEAVE PINS D AND E OPEN.
 - CABLES AND MATING CONNECTORS NOT SUPPLIED.

DRAWN BY :	ETP	DO NOT SCALE
DATE :	11/17/08	TOLERANCES
CHECKED :		.XX = .000"
APPROVED :		.XXX = .005"

Q3467 HOTD	
PART NO.	DWG NO.
	C3467
REV	PAGE 1 OF 1
A	



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DIMENSIONS AND TOLERANCES

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND INCLUDE PLATED AND/OR CHEMICALLY APPLIED FINISHES. ALL ITEMS TO BE FREE FROM BURRS AND SHARP EDGES. ALL BEND RELIEF - MINIMUM REQUIRED FOR MATERIAL USED.

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