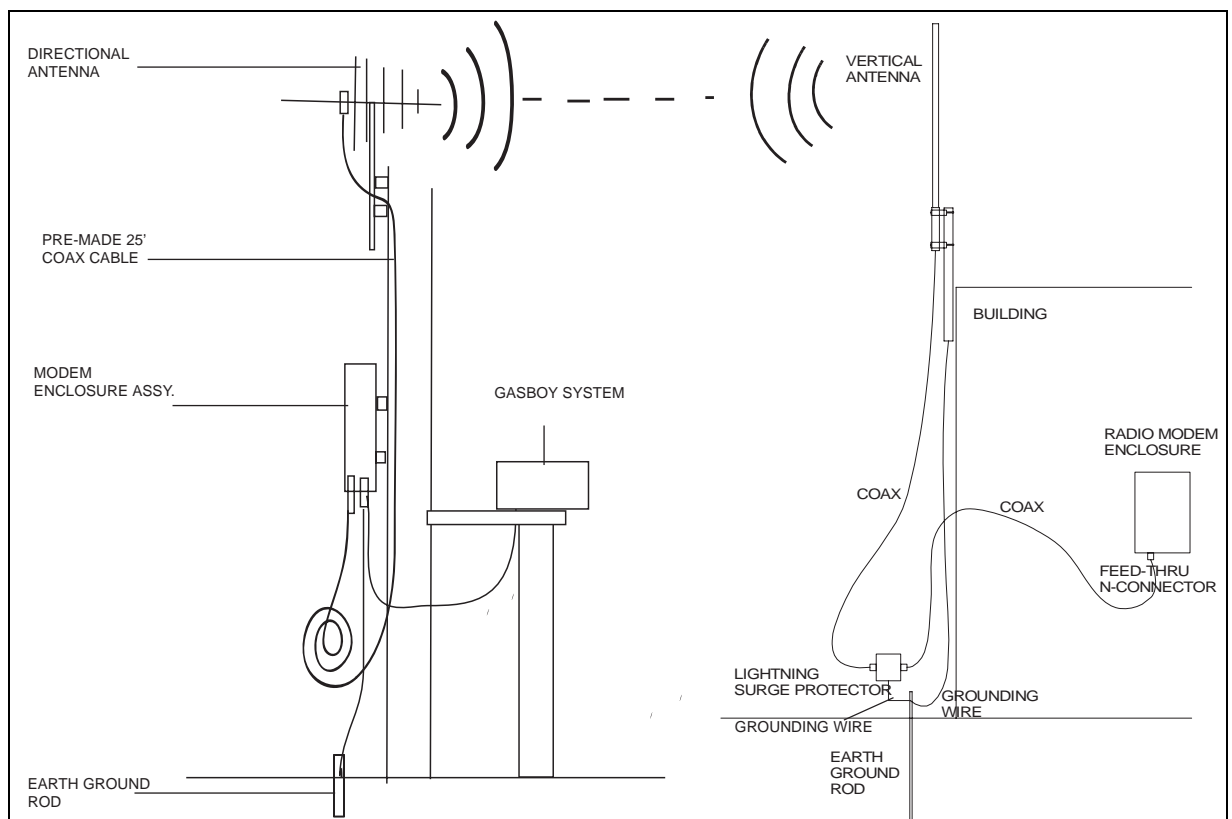


Introduction

Purpose

This document provides instructions for the installation of a wireless solution in TopKAT™ Online, TopKAT, Series 1000, and Islander II Gasboy® systems. The installation of a wireless modem helps to avoid trenching and installation of metal conduits for communication wires between the Gasboy system and the PC system. This document also contains information on using a Serial-to-LAN converter to communicate with one of the Gasboy systems listed above. See [Serial-to-LAN Connection Installation](#) on [page 28](#). A typical Gasboy Wireless system is shown in [Figure 1](#).

Figure 1: Gasboy Wireless System - Omnidirectional and Directional Antennas



Notes: 1) The distance between the PC system and Gasboy system can be up to 3 miles (4.8 kilometers).

2) If the communication is disrupted between the PC and the Gasboy systems for any reason, it could take up to 5 minutes to re-initialize.

IMPORTANT INFORMATION

- The Wireless solution cannot extend communications between Gasboy devices [such as Island Card Readers (ICR), 9800 series pumps, Gasboy Pump Control Units (PCU)], and other manufacturer electronic pumps. Also, it is not intended to be used for credit card network communications.
- The Wireless solution is only intended for point-to-point communication between one PC and one Gasboy Fuel Management System (FMS) at a time. Multiple Gasboy FMS systems will require one Base Station kit and one Fueling Position kit for each point-to-point wireless communication link. An RS-232 A/B has to be locally supplied to switch between the multiple base stations and Gasboy FMS systems.

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Required Tools

The following tools are required for the installation of the kit:

- Phillips® Screwdriver
- Soldering Iron and Solder
- Wire Strippers
- Needle Nose Pliers
- Diagonal Cutters
- 3/8 inch Socket Wrench Kit

Parts List

Fueling Position Wireless Communication Kit (M06544K001)

Description	Part Number	Quantity
Assembly, Radio Housing	M06545A001	1
Bracket, Pedestal to Pole	M05844B001	2
Base, Modified TopKAT	M05845B001	1
Conduit Fitting	M01756A001	1
Tube Flex Conduit Non	M01575B003	1
Cable, RS-232/Power To	M06543A001	1
Antenna, 8.5 DBD 6 Element	M06554A001	1
Cable, Antenna 25 FT Coax	M06549A001	1
Sware, Coyote Datacom	KS319-001PC	1

Base Station Wireless Communication Kit (M06544K002)

Description	Part Number	Quantity
Assembly, Radio Housing	M06545A002	1
Antenna, 5 DBI Monopole	M06553A001	1
Kit, Omni Antenna Mount	M06568A001	1
Power Supply	M01878B001	1
Lightning Protector	M06555B001	1
Genmen Com 1 for Ser Ptr	Q13180-20B	1
Cable, Work Area 15 Ft	Q13850-15	1
Genmen Coyote Modem	Q13180-61	1
Assembly, Mounting Bracket	M05971A001	1
Sware, Coyote Datacom	KS319-001PC	1

Fueling Position Radio Housing Assembly (M06545A001)

Description	Part Number	Quantity
NEMA Enclosure, Bud	M06546B002	1
Data Radio Module	M06551A001	1
Board, Interface RS-232	M06550A002	1
Cable, DB9 To Terminal	M06541A001	1
Cable, Radio Power To	M06542A001	1
Cable, 13" Coax Reverse	M06548A001	1
Lightning Protector	M06555B001	1
Assembly, Mounting Bracket	M05971A001	1
Bracket, Radio/Modem	M05842B001	1
Termn Barrier Strip	Q10130-20	1
Bracket, Radio Housing To	M05843B001	2
Conduit Fitting	M01757A001	1
Cable Assembly, ISL/TOK 12 V Po	C07263	1

Base Station Radio Housing Assembly (M06545A002)

Description	Part Number	Quantity
NEMA Enclosure, Bud	M06546B002	1
Data Radio Module	M06551A001	1
Board, Interface RS-232	M06550A002	1
N-Connector Bulkhead	M06572B001	1
Bracket, Radio/Modem	M05842B001	1
Suprt Circuit Board	Q10651-38	4
Cable, 13" Coax Reverse	M06548A001	1

Direct TCP/IP to Serial Interface Kit (M06643K001)

Description	Part Number	Quantity
25 Pin RS-232 To 10 Base-T	M06643B001	1
Label, Ethernet Converter	M06727B001	1
Power Supply, Lantronix	M06643B002	1
Cable Assembly, RS-232 Modem M/	C04532	1

Serial Tunneling (Direct Connect or Modem Emulation) Interface Kit (M06643K002)

Description	Part Number	Quantity
25 Pin RS-232 To 10 Base-T	M06643B001	2
Label, Ethernet Converter	M06727B001	2
Power Supply, Lantronix	M06643B002	2
Cable Assembly, RS-232 Modem M/	C04532	1
DB25M/DB9F Modem Cable	Q13240-09	1

Related Documents

Document Number	Title	GOLD Library
C35963	CFN Series Islander II Installation Manual	CFN Series Controllers and POS
MDE-4319	TopKAT Fuel Management System Installation Manual	Series 1000/Fleetkey and TopKAT
MDE-4344	Series 1000 Fuel Management System Installation Manual	Series 1000/Fleetkey and TopKAT

Abbreviations and Acronyms

The following table contains a list of acronyms used in this document.

Term	Expansion
AC	Alternating Current
ASC	Authorized Service Contractor
CFN	Cash Flow Network
CD	Compact Disk
CDR	Call Data Record
COM	Communications Port
CSC	Customer Specified Contractor
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
FCC	Federal Communications Commission (http://www.fcc.gov)
ICR	Island Card Reader
LAN	Local Area Network
NEMA	National Electrical Manufacturers Association (http://www.nema.org/)
PC	Personal Computer
PCU	Pump Control Unit
RF	Radio Frequency
RS	Request to Send

Intended Users

The intended users of this document are Authorized Service Contractors (ASCs) and Customer Specified Contractors (CSCs).

Installation Requisites

At each end of the communication loop (namely the fueling position and the PC system), you require the following:

- One antenna (see [note](#))
- One wireless modem (see [note](#))
- One tower or mast

The basic theory of installation and the guidelines for mounting and placing the antenna, coaxial cable runs and the parts required, are identical for all systems. The differences between the two positions is in the programming of the wireless modems at each end of the communication loop and the RS-232 cables, that are required. For cable details, refer to [At the Gasboy System End on page 14](#) and [Appendix: Cable Information on page 51](#).

Notes: 1) Currently, you must have one modem at the polling PC for each modem attached to a Gasboy system (except TopKAT Online). For example, if you have two Series 1000 systems that can be polled from the same PC, you will need two wireless modems at the polling PC and two antennas.

2) The Wireless solution is only intended for point-to-point communication between one PC and one Gasboy Fuel Management System (FMS) at a time. Multiple Gasboy FMS systems will require one Base station kit and one Fueling position kit for each point-to-point wireless communication link. An RS-232 A/B has to be locally supplied to switch between the multiple base stations and Gasboy FMS systems.

Federal Communications Commission (FCC) Requirements

FCC RF Exposure Statement

This device complies with FCC radiation exposure limits as set forth for an uncontrolled environment. This device should be installed and operated with a minimum separation distance of 20 cm (7.87 inches) between the radiator and your body.

FCC Compliance Warning

Changes or modifications to the CDR-915 not expressly approved by Coyote DataCom, Inc. could void the user's authority to operate this product.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, then the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit that is different from the circuit to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warranty

For information on warranty, refer to MDE-4255 Gasboy's Warranty Policy Statement. If you have any warranty-related questions, contact Gasboy's Warranty Department at its Greensboro location.

Important Safety Information

This section introduces the hazards and safety precautions associated with installing, inspecting, maintaining or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, electrical shock or pressure release could occur and cause death or serious injury, if these safe service procedures are not followed.

Preliminary Precautions

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage or pressures. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain or service this equipment.

Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump/dispenser and island. Locate the switch or circuit breakers that shut off all power to all fueling equipment, dispensing devices, and Submerged Turbine Pumps (STPs).

WARNING



The EMERGENCY STOP, ALL STOP, and PUMP STOP buttons at the cashier's station WILL NOT shut off electrical power to the pump/dispenser. This means that even if you activate these stops, fuel may continue to flow uncontrolled.



You must use the TOTAL ELECTRICAL SHUT-OFF in the case of an emergency and not the console's ALL STOP and PUMP STOP or similar keys.

Total Electrical Shut-Off Before Access

Any procedure that requires access to electrical components or the electronics of the dispenser requires total electrical shut off of that unit. Understand the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing Gasboy equipment.

Evacuating, Barricading and Shutting Off

Any procedure that requires access to the pump/dispenser or STPs requires the following actions:



- An evacuation of all unauthorized persons and vehicles from the work area
- Use of safety tape, cones or barricades at the affected unit (s)
- A total electrical shut-off of the affected unit (s)

Read the Manual

Read, understand and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, call a Gasboy Authorized Service Contractor or call the Gasboy Service Center at 1-800-444-5529. It is imperative to your safety and the safety of others to understand the procedures before beginning work.

Follow the Regulations

Applicable information is available in National Fire Protection Association (NFPA) 30A; *Code for Motor Fuel Dispensing Facilities and Repair Garages*, NFPA 70; *National Electrical Code (NEC)*, Occupational Safety and Hazard Association (OSHA) regulations and federal, state, and local codes. All these regulations must be followed. Failure to install, inspect, maintain or service this equipment in accordance with these codes, regulations and standards may lead to legal citations with penalties or affect the safe use and operation of the equipment.

Replacement Parts

Use only genuine Gasboy replacement parts and retrofit kits on your pump/dispenser. Using parts other than genuine Gasboy replacement parts could create a safety hazard and violate local regulations.

Safety Symbols and Warning Words

This section provides important information about warning symbols and boxes.

Alert Symbol



This safety alert symbol is used in this manual and on warning labels to alert you to a precaution which must be followed to prevent potential personal safety hazards. Obey safety directives that follow this symbol to avoid possible injury or death.

Signal Words

These signal words used in this manual and on warning labels tell you the seriousness of particular safety hazards. The precautions below must be followed to prevent death, injury or damage to the equipment:



DANGER: Alerts you to a hazard or unsafe practice which will result in death or serious injury.



WARNING: Alerts you to a hazard or unsafe practice that could result in death or serious injury.



CAUTION with Alert symbol: Designates a hazard or unsafe practice which may result in minor injury.

CAUTION without Alert symbol: Designates a hazard or unsafe practice which may result in property or equipment damage.

Working With Fuels and Electrical Energy

Prevent Explosions and Fires

Fuels and their vapors will explode or burn, if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause potentially dangerous vapors in the vicinity of the dispenser or island.

No Open Fire



Open flames from matches, lighters, welding torches or other sources can ignite fuels and their vapors.



No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuel vapors. Every time you get out of a vehicle, touch the metal of your vehicle, to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Familiarize yourself with Cardiopulmonary Resuscitation (CPR) methods, if you work with or around high voltages. This information is available from the American Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSHA Lockout/ Tagout procedures. If you are not familiar with this requirement, refer to this information in the service manual and OSHA documentation.

Working With Electricity Safely

Ensure that you use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion or electrical shock. Ensure that grounding connections are properly made. Take care that sealing devices and compounds are in place. Ensure that you do not pinch wires when replacing covers. Follow OSHA Lockout/Tagout requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Ensure that you clean hands after handling equipment. Do not place any equipment in the mouth.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause cancer.

WARNING

The pump/dispenser contains a chemical known to the State of California to cause birth defects or other reproductive harm.

In an Emergency

Inform Emergency Personnel

Compile the following information and inform emergency personnel:

- Location of accident (for example, address, front/back of building, and so on)
- Nature of accident (for example, possible heart attack, run over by car, burns, and so on)
- Age of victim (for example, baby, teenager, middle-age, elderly)
- Whether or not victim has received first aid (for example, stopped bleeding by pressure, and so on)
- Whether or not a victim has vomited (for example, if swallowed or inhaled something, and so on)

WARNING



Gasoline ingested may cause unconsciousness and burns to internal organs.

Do not induce vomiting.

Keep airway open.

Oxygen may be needed at scene.

Seek medical advice immediately.

WARNING



Gasoline inhaled may cause unconsciousness and burns to lips, mouth and lungs.

Keep airway open.

Seek medical advice immediately.

WARNING



Gasoline spilled in eyes may cause burns to eye tissue.

Irrigate eyes with water for approximately 15 minutes.

Seek medical advice immediately.

WARNING



Gasoline spilled on skin may cause burns.

Wash area thoroughly with clear water.

Seek medical advice immediately.

IMPORTANT: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.

Lockout/Tagout

Lockout/Tagout covers servicing and maintenance of machines and equipment in which the unexpected energization or start-up of the machine(s) or equipment or release of stored energy could cause injury to employees or personnel. Lockout/Tagout applies to all mechanical, hydraulic, chemical or other energy, but does not cover electrical hazards. Subpart S of 29 CFR Part 1910 - Electrical Hazards, 29 CFR Part 1910.333 contains specific Lockout/ Tagout provision for electrical hazards.

Parts Information

Parts Supplied by Gasboy

The following table lists the parts supplied by Gasboy and the corresponding explanation.

Parts	Explanation
Two Wireless Modem Enclosure Assemblies: <ul style="list-style-type: none"> • For Fueling Position (M06545A001). See Figure 2 on page 10. • For Base Station (M06545A002). See Figure 3 on page 11. 	<ul style="list-style-type: none"> • One wireless modem enclosure is used at each end of the communications loop (see note on page 5). • You must have a copy of the Call Data Record (CDR) Setup Tools version 2.2 or above (KS319 001PC) to program the modems. This is provided with the M06544K002 kit. This software is also available as a free download at http://www.coyotedatacom.com/support.htm • You will need a PC capable of running the software, a serial port, and a DB9 male to female cable to connect the PC to the wireless modem. The same cable can also be used for a laptop. <p><i>Note: This cable is assembled in the field from the following loose parts shipped in the M06544K002 kit:</i></p> <ul style="list-style-type: none"> - Q13850-15 (cable, work area, 15 feet) - Q13180-20B (gender mender, 9-pin D-sub to jack) - Q13180-61 (gender mender, Coyote modem, for M06551A002) • The power connection for the wireless modem at the Gasboy system end is provided by the Gasboy system power supply. For the wireless modem at the PC end, the power is provided from a M01878B001 110-volt AC to 12-volt DC transformer block. This transformer MUST be plugged into the same circuit that provides power to the PC. • Gasboy supplies 4 Amphenol (82-202) or its equivalent as the N style male connector (M06547B001) for use with the Base station kit coaxial cable runs. Two connectors are needed for each coaxial cable run. These connectors are sized for the RG8/U cable diameter. If you use a different cable, you will have to locally purchase connectors that are sized for the cable installed. Two of these connector kits are used for the coaxial cable run from the antenna to the lightning suppressor and two are used for the coaxial cable run for the lightning arrestor to the Base station kit. See Assembling the Connector (M06547B001) on page 20 for details. • Once the system communication is fully tested, these connections MUST be protected by an appropriate sealing tape (M06571B001) designed for an all weather environment.
Antennas: <ul style="list-style-type: none"> • At fueling positions: 6 dB Gain Directional Yagi Antenna (M06554A001) • At base stations: 5 dB Gain Omnidirectional (M06553A001) 	<ul style="list-style-type: none"> • One antenna will be used at each end of the communications loop (see note on page 5). • A mounting kit to attach the omni antenna to the antenna mast is supplied as part of the antenna kit (M06568A001). • In general, a directional antenna is used at the Gasboy system end of the communications loop and an omnidirectional antenna at the PC end of the loop. • On sites with a single Gasboy system, and where the distance between antennas is more than 2500 feet (762 meters), the use of two directional antennas is recommended. • On sites with a single Gasboy system and line of sight partially blocked by high voltage transformers, microwave towers or in the neighborhood of airports, the use of two directional antennas is recommended if the distance between towers exceeds 1500 feet (457.2 meters).

Figure 2: Modem Enclosure - Fueling Position

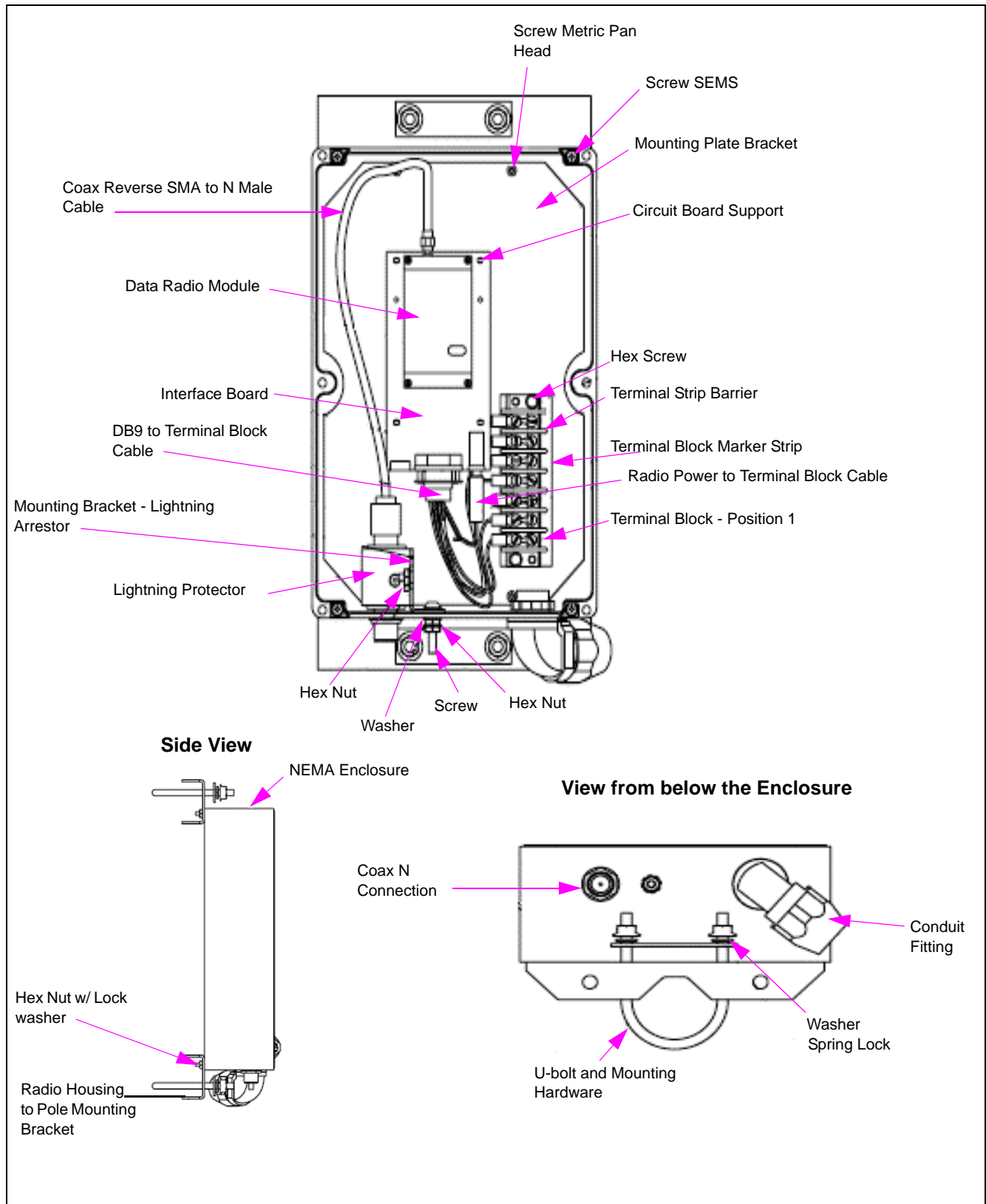
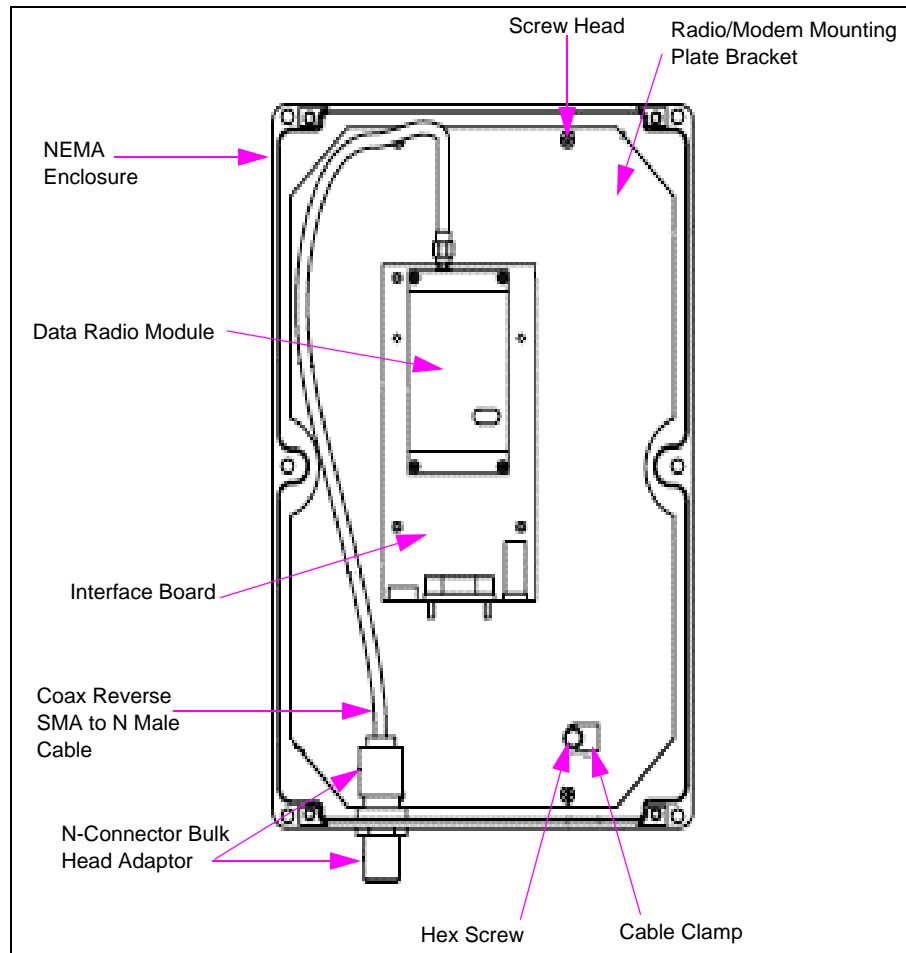
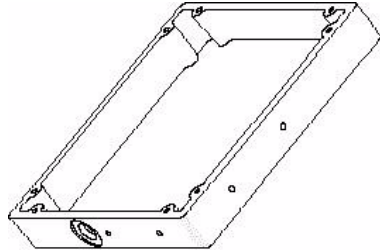


Figure 3: Modem Enclosure - Base Station



Additional Parts Supplied at the Gasboy System End

Parts	Explanation
Gasboy TopKAT Riser Collar (M05845B001)	<p>Under the Gasboy TopKAT on a pedestal, a field-installed Riser Collar is placed. This collar has one flexible conduit outlet that is attached directly to the wireless modem enclosure. In addition, it has the clamp assemblies that attach the Gasboy TopKAT to one leg of the antenna tower or mast, and facilitates mounting of the wireless modem enclosure. This conduit will allow DC power and RS-232 communications between the Gasboy TopKAT and the wireless modem.</p> <ul style="list-style-type: none"> • The RS-232 wiring for the individual Gasboy systems is listed in Appendix: Cable Information on page 51. • The DC power wire provided will work with any system. It may be cut to length, if needed.



IMPORTANT INFORMATION

Do not use this riser collar for any other Gasboy system. It is only to be used on pedestal mounted TopKATs. For all other Gasboy systems including TopKATs mounted on a dispenser, refer to [page 14](#).

CAUTION

The Gasboy pedestal mount TopKAT should be completely removed to install the collar. Ensure that you fully understand how to replace all disconnected cables, so that they can be properly reinstalled once the collar is installed, and properly attached. Failure to do so can cause damage to the system, and is not covered by the warranty.

Additional Parts Supplied at the PC End

Parts	Explanation
RS-232 Communication cable (Q13850-15)	<p>See Appendix: Cable Information on page 51 for proper cable connection.</p> <p>This is a 15-foot CAT-5 Cable with gender menders at each end to interface the PC to the Modem Interface Board.</p>

Parts Not Supplied by Gasboy

Parts	Explanation
Towers, Masts, and Mast Mounting Brackets	<ul style="list-style-type: none"> • The distributor is responsible for supplying, and properly installing the towers, masts, or mast mounting brackets. • The manufacturer's installation manual MUST be followed.
Towers or masts at the Gasboy system end	<ul style="list-style-type: none"> • Up to a 28-foot tower can be installed at the Gasboy system end without the use of guy wires. This can consist of a 10-foot tower and a 10-foot mast for a total of 18 feet, or a 20-foot tower and a 10-foot mast for a total of 28 feet. • The height of the tower is to be determined by the line of sight requirements of the antenna located on the top of this tower or mast, to the PC wireless modem and its antenna at the top of its mast or tower. • An appropriate base plate/mounting bracket to support the tower may be sourced from one of the following: <ul style="list-style-type: none"> – Tally Communication (http://www.talleycom.com/) – Radian (http://www.radiancorp.com/)

Parts	Explanation
Mast or tower at the PC end	<ul style="list-style-type: none"> Usually, a building mast bracket will be used at the PC end for the wireless modem antenna. This bracket must be mounted such that the antenna is above the roof line of the building it is attached to. Usually, you can install a 10-foot mast which gives an 8-foot height increase from the point of mounting. Masts taller than 10 feet generally require the use of guy wires for support. If an appropriate mounting to the side or top of the building cannot be located, a tower may be used.
Coaxial cable and connectors used between wireless modem enclosure and antenna	<ul style="list-style-type: none"> Gasboy requires the use of RG8 or RG8U coaxial cable. Belden 7810 or its equivalent meets the Gasboy cable loss requirement. If you are using Belden 7810 or its equivalent, it is recommended that cable lengths do not exceed 150 feet (45.72 meters). <p><i>Note: Ensure that the drip loops are provided on all the coaxial cable runs. These should be provided in such a manner that all connectors, antennas, wireless modem enclosures and the accesses to the building have a drip loop installed.</i></p>
Conduit	If the Gasboy system is not a pedestal mounted TopKAT, conduit from the system to the wireless modem must be supplied.
Ground Rods and Ground Wires	<ul style="list-style-type: none"> Each tower requires a dedicated ground rod located as close as possible to the tower or mast. The tower and the wireless modem enclosures ground lug for that particular end of the wireless communication loop MUST be connected to that particular ground rod only. The installed ground rod is connected to the tower or mast and to the wireless modem enclosure ground lug with a ground wire not less than AWG #4.

Site Installation Review and Considerations

At the PC End or the Building End of the Wireless Communications Loop

Ensure the following for wireless modem placement and coaxial cable runs:

- PC power and wireless modem power MUST come from the same AC circuit. The wireless modem operates in the 900 MHz range, which is in the same range as some cordless phones and cell phones. It is recommended not to have a 900 MHz spread spectrum phone base in the vicinity of the wireless modem enclosure.
- Gasboy provides a 15-foot RS-232 communications cable from the PC to the Wireless modem. This RS-232 cable can be extended to 50 feet only (15.24 meters) and ONLY in the metal conduit. Cable shield integrity must be maintained if the cable is extended.
- From the wireless modem enclosure to the antenna, you can run RG8/U coaxial cable to the antenna. During the length of this cable run, it MUST not be run along with or bundled to AC conduits, CAT-5, or phone line wires. It may cross over these wires at 90 degrees.
- The antenna must be above the roof line and clear of obstructions. This antenna must have a line of sight view of the antenna mounted at the Gasboy system end of the wireless communication loop.
- A standard building wall mount mast bracket will only give an 8-foot rise without the use of guy wires. Gasboy recommends the use of the wall mount at the building so as to not penetrate the building roof. In Northern climates, ensure that the antenna is placed well above the roof line so that it does not get buried by snow accumulation.
- Currently, you must have one modem at the polling PC for each modem attached to a Gasboy system (except TopKAT Online). For example, if you have two Series 1000 systems that can be polled from the same PC, you will need two wireless modems at the polling PC and two antennas.

At the Gasboy System End

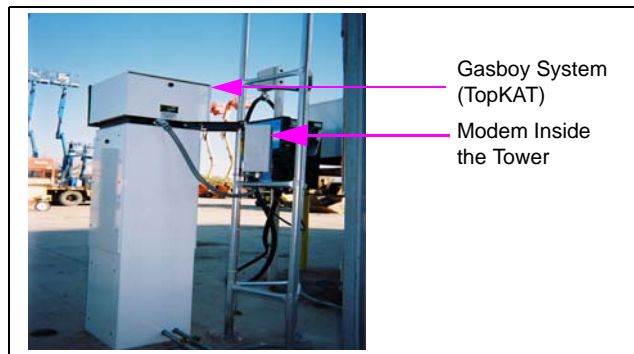
Note: The fueling position assembly must be mounted no lower than 18 inches above the ground and no closer than 18 inches to any fuel dispenser.

Antenna Mast or Tower

- The height of the mast or tower will be determined by the line of sight requirement between this antenna and the PC wireless antenna.
- You are allowed to use a 10-foot mast, or a 10-foot tower and 10-foot mast (11 feet to 18 feet total height), or a 20-foot 1 or 2 section tower and 10-foot mast (21 feet to 28 feet total height) without the use of guy wires.
- If a tower base section is used, the manufacturers' requirements for the installation of that tower must be followed for the height of the tower installed.

Note: A tower and mast section is preferred as it encloses the wireless modem inside the tower and protects it from being damaged.

Figure 4: Modem Inside the Tower



Distance to the Modem Enclosure

For Gasboy systems other than a pedestal mount TopKAT unit, the modem enclosure must not be more than 20 feet (6.1 meters) away. All other wire and conduit requirements specified in the system installation manual must be followed.

Note: Do not use collar and conduit supplied with the kit.

Figure 5: TopKAT Dispenser Mount

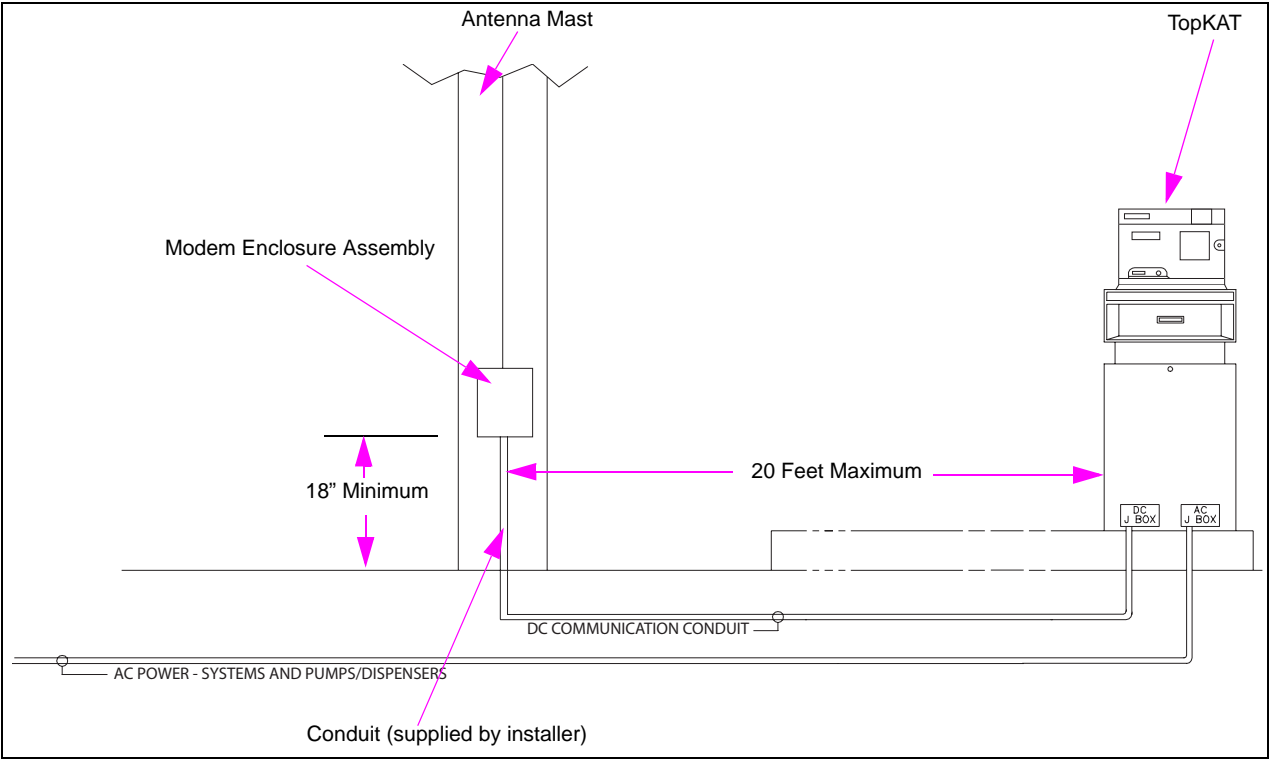


Figure 6: Gasboy System (Series 1000, Islander)

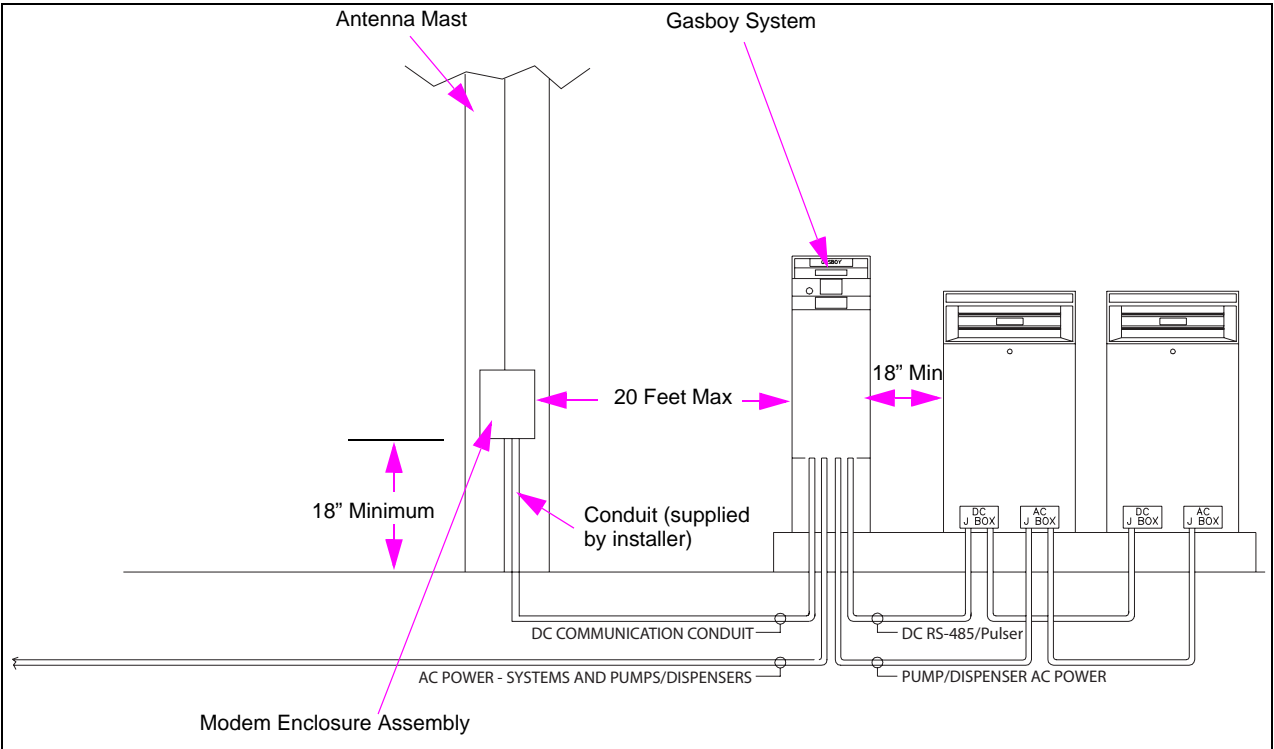
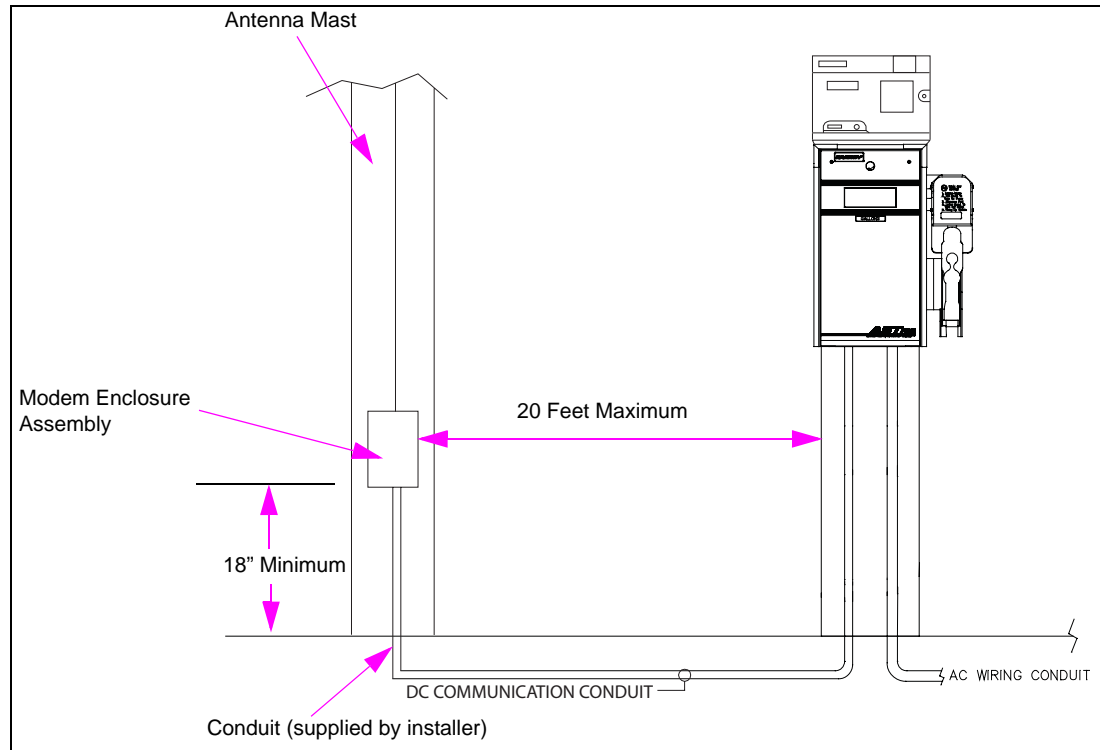


Figure 7: TopKAT Mounted on an ASTRA

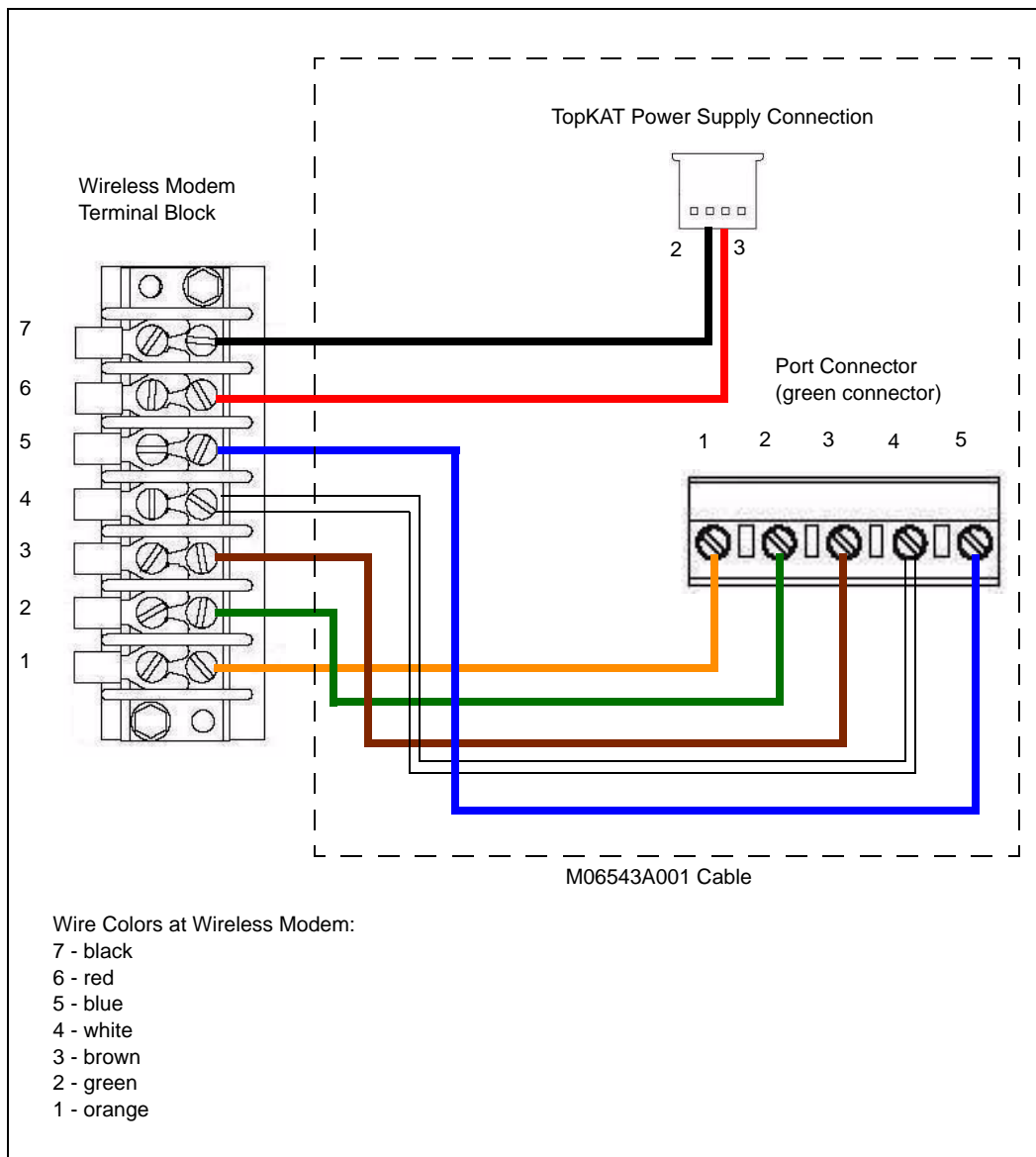


Connections between the Wireless Modem and a TopKAT Unit

For an installation with a TopKAT unit mounted on a dispenser, connect five of the wires from the dispenser DC conduit directly to the port (green connector) and connect two others to the red and black wires on the M06543A001 cable ([Figure 8 on page 17](#)). In this case, the M06543A001 cable should be cut short enough so that excess cable is not left in the TopKAT unit.

If the TopKAT unit is mounted on a 9850 dispenser (that has only six wires in the DC conduit), connect the black wire from the power supply connector together with the wire connected to pin 5 of the port connector (green connector). At the modem end, connect that wire to position 5 of the modem terminal block and jumper positions 5 and 7 together.

Figure 8: Wireless Modem to TopKAT Connections – M06543A001 Cable



Connections between the Wireless Modem and an Islander

To use the wireless modem with the Islander, you must configure the remote port to be either port 1 or port 3 (Figure 9). The Islander CPU K1 (port 1) or K2 (port 3) jumper patch and the jumpers (K1 or K2) on the Site Communications I/O board must be configured as shown in Figure 10.

On the Site Communications I/O PCA, K3 (for port 1) or K4 (for port 3) should not be jumpered. A C07263 cable (included with the M06544K001 kit) must be installed on the Site Communications I/O PCA that controls ports 1 and 3. This cable will connect to P10 and pins 6 through 10 of P3 (port 1) or P4 (port 3).

Figure 9: Wireless Modem to Islander Connections

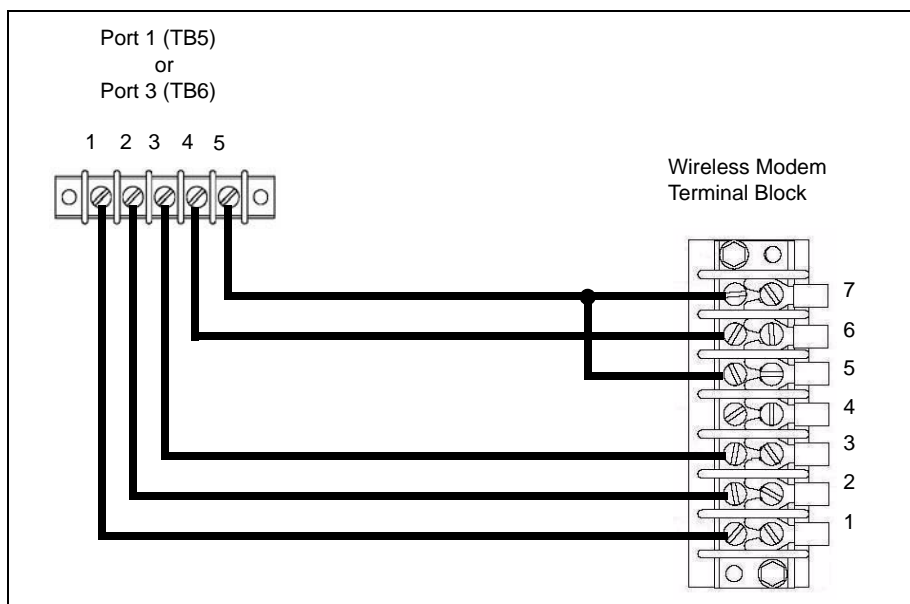
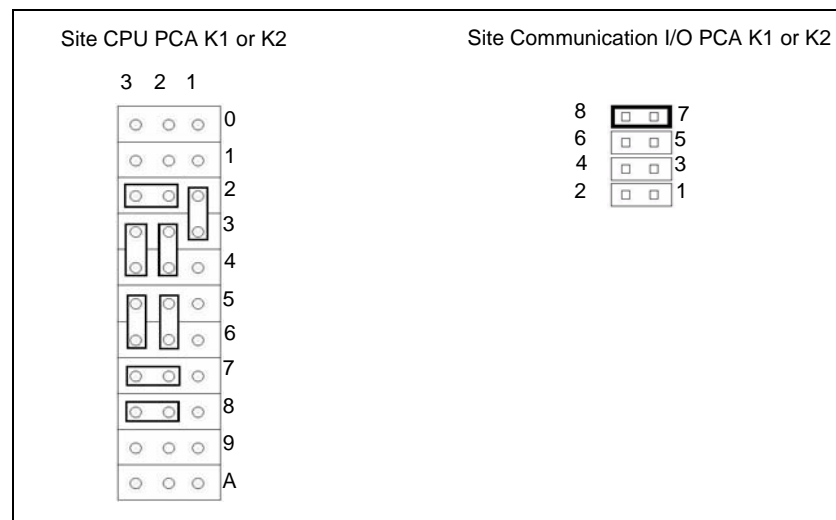


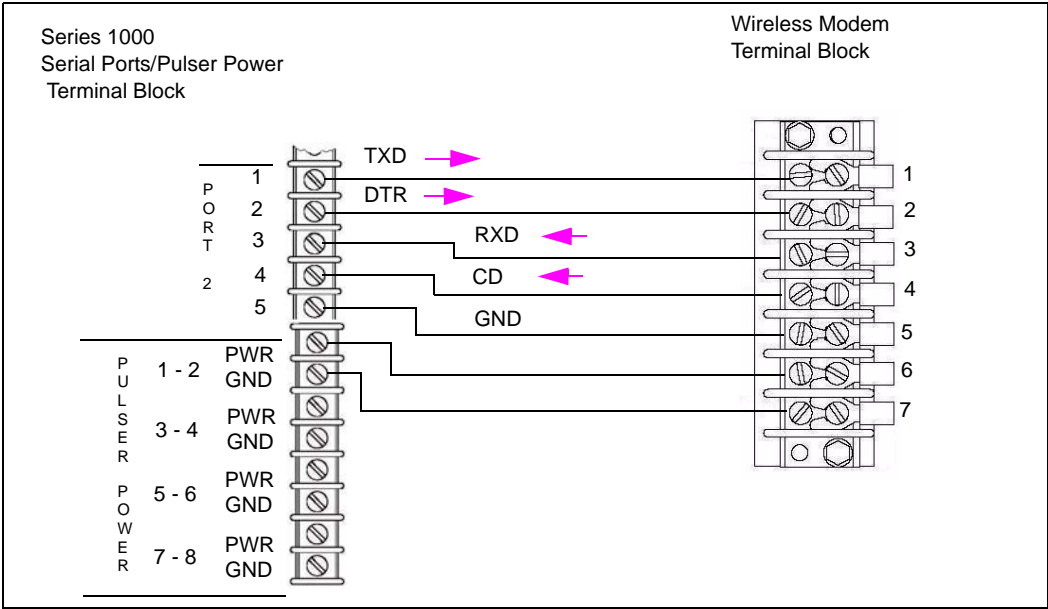
Figure 10: Jumper Configurations



Connections between the Wireless Modem and a Series 1000 Unit

Figure 11 shows the wiring connections between the wireless modem and a Series 1000 System.

Figure 11: Wireless Modem to Series 1000 Connections



Site Preparation, Setup Programming, and Testing

Assembling the Connector (M06547B001)

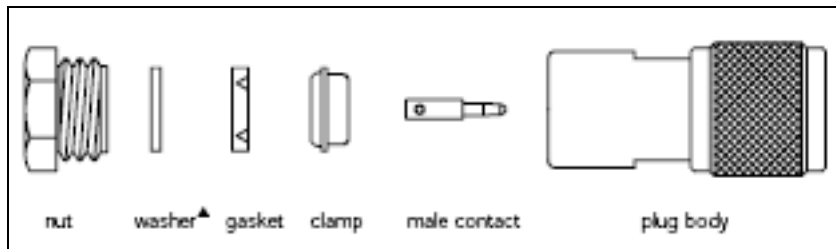
Parts Required

The following parts are required to assemble a N-plug connector:

- Nut
- Washer
- Gasket
- Clamp
- Male contact
- Plug body

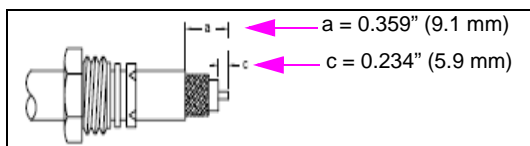
Note: You will need a soldering iron to assemble the connectors.

Figure 12: N-plug Connector Parts

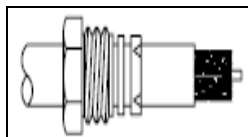


To assemble the N-plug connector, proceed as follows:

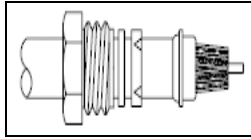
- 1 Place the nut, washer and gasket (with the “V” groove towards the open end of the cable) over the cable, and cut off the jacket to dimension **a**.



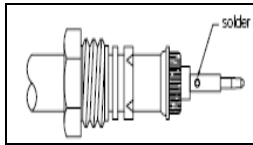
- 2 Comb out the braid and fold out. Bare the center conductor to dimension **c** as shown.



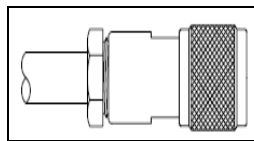
- 3 Pull the braid wires forward and taper them towards the center conductor. Place the clamp over the braid and push it back against the cable jacket.



- 4 Fold back the braid wires as shown, trim the braid to proper length and form over the clamp as shown. Tin center conductor and solder on contact.



- 5 Insert the cable and parts into the connector body. Ensure that the sharp edge of the clamp seats properly in the gasket. Tighten the nut.



Installing the CDR Tools Software for the Wireless Modem Setup

The CDR Tools Software from Coyote must be used to program the Coyote wireless modem. This KS319 001PC software is provided with the Base Station kit.

You should load this software on your computer and the Site PC that will be connected to the wireless modem. When the installation is complete, the **Radio Programmer** icon appears on your desktop.

To install the CDR Tools Software, proceed as follows:

- 1 Insert the diskette into the appropriate drive.
- 2 Click **Start > Run**. The Run dialog box appears.
- 3 Type **A:\Setup**.
Note: On most computers, the floppy drive is referred to as "A". If your floppy drive is not referred to as "A", type the appropriate letter. The installation process begins.
- 4 At the License Agreement screen, click **Yes**.
- 5 At the Setup Type screen, select **Typical** and click **Next**. The copying of files begins.
- 6 Insert Disk 2 when instructed to do so, and click **OK**.
- 7 Click **Yes** to restart your computer.

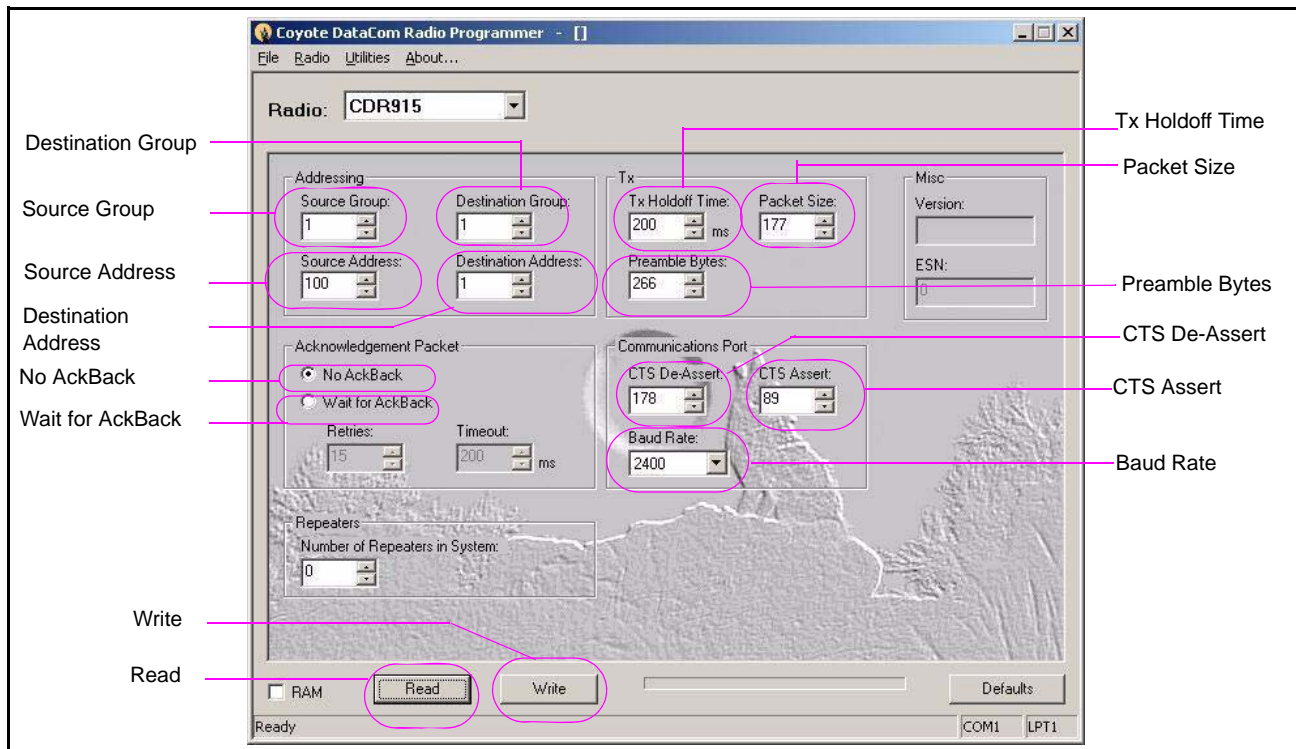
- 8 After the PC reboots, connect the appropriate RS-232 cable between the computer COM port and the wireless modem. See [Appendix: Cable Information](#) on [page 51](#) for cable details.
- 9 Connect DC power to the modem.

Programming the Wireless Modems

To program the wireless modems, proceed as follows:

- 1 Click the **Radio Programmer** icon on your desktop. The Coyote DataCom Radio Programmer window appears.

Figure 13: Default Coyote DataCom Radio Programmer Window



*Note: If you get an error message regarding the COM port, click **Utilities > Port Setting** and select the correct port through which you are communicating. The Default setting is COM 1.*

- 2 Click **Read** to get Config information from the Modem.
- 3 Locate the Source Group and Destination Group on the Screen, and set the values to one (1) for all modems.

- 4 Locate the Source Address and Destination Address, and set the values from the table below.

Note: The values in the table are for PC TopKAT Online Software ONLY using SPECIAL software in the TopKAT system.

Wireless Modem	Source Address	Destination Address
PC Modem	100	0
TopKAT Modem	Match TopKAT Poll Address	100

Note: The values in the table are for Standard TopKAT, Series 1000, FleetKey and Islander II.

Wireless Modem	Source Address	Destination Address
PC Modem	100	1
Gasboy System Modem	1	100

Note: Ensure that the auto poll interval (time between successive auto polls) is set to ten (10) minutes.

- 5 Locate the box labeled Tx (upper right corner of screen), and set the values from the table below.

	Tx Holdoff Time	Packet Size	Preamble Bytes
PC TopKAT Online	5 ms (default)	177 (default)	400 or 266 (default)
For all other Gasboy Systems	200 ms (default)	150 (default)	266 (default) (default for 2400 baud)

- 6 Locate Acknowledgement Packet Box.
- “No AckBack” should be selected for sites with multiple PC TopKAT Online systems and all other Gasboy systems.
 - “Wait for AckBack” may be selected for sites with only one PC TopKAT Online system.

Note: Both modems MUST be set to the same option for the modems to function properly.

- 7 Locate Communications Port Box, and set the values from the table given below.

	CTS De-Assert	CTS Assert	Baud Rate
PC TopKAT Online	178 (default)	89 (default)	9600
For all other Gasboy systems	178 (default)	89 (default)	2400

CAUTION

4800 baud and 9600 baud must not be used for other Gasboy systems. Use of baud rates higher than 2400 baud will cause modem buffer overflow and the Gasboy system will sign off prematurely.

Note: Both modems MUST be set to the same value. Baud rate MUST match the Gasboy PC software baud rate setting.

- 8 Click **Write** to save the values entered.
- 9 Click **Read** to verify the values entered have been saved correctly.

Additional notes for PC TopKAT Online software:

- Notes:*
- 1) During background polling, the destination address of the modem connected to the PC will be set by the PC TopKAT Online software to zero (0). This setting will allow the modem to issue a broadcast command that can be heard by all modems at the TopKAT systems. Only the TopKAT with the correct poll address will respond to the command.
 - 2) When the user selects the “Contact a TopKAT” option, the PC TopKAT Online software will set the destination address of the modem connected to the PC to the value of the poll address for the selected TopKAT site, and turn on the “AckBack” option. This will ensure that only the requested TopKAT systems respond to the entered commands.
 - 3) The PC TopKAT Online software package is specifically designed to allow up to 32 TopKAT systems running specific TopKAT software and controlled by one PC via a wireless modem.

Radio Programmer Utilities – Spectrum Analyzer

The Radio Programmer software includes the Spectrum Analyzer, which helps you look at the signals and strengths in the vicinity of your modem.

To access the Spectrum Analyzer, proceed as follows:

- 1 Ensure that the Gasboy PC software has been closed or shut down; also ensure that the HyperTerminal session is not running.
- 2 From Coyote DataCom Radio Programmer window, click **Utilities**.
- 3 Click **Path Management**.
- 4 Select **Spectrum Analyzer**.
- 5 Click **START**. The signals around your site, which fall into the same spectrum as that of your wireless modem are read.

Setting Up a Microsoft HyperTerminal for Testing and Troubleshooting

To set up a Microsoft HyperTerminal for testing and troubleshooting, proceed as follows:

- 1 Open the HyperTerminal (included with most versions of Microsoft Windows software).
- 2 Create a new connection and use the same port and baud rate as you did for the Gasboy PC software package.
- 3 Other Communications setting should be set for 8 data, none/no for parity and 1 stop bit. Flow control should be “none” for TopKAT and Series 1000 and Xon/Xoff for Gasboy CFN systems.
- 4 Terminal emulation should be set to Auto detect.
- 5 It is recommended that you name and save this as “Gasboy Hyper Connect.”
- 6 Create a shortcut and place it on the Windows desktop next to the Gasboy PC Software icon and Radio Programmer icon.

Testing the Gasboy System Remote Port

It is recommended that the Gasboy remote port be tested, if possible, with a laptop PC or terminal before connecting the wireless modem system. Use the same HyperTerminal setup as listed above. Ensure that the remote port baud rate is properly set up as per the appropriate Gasboy system Operator or Start up manual. Ensure that the Gasboy port is set up for RS-232 communication and NOT RS-485 communications.

Refer to [Appendix: Cable Information](#) on [page 51](#) for Laptop to Gasboy System RS-232 cables.

HyperTerminal Test

Connecting and Testing PC to Gasboy System Communications with the Wireless Modems Connected

At this point, you should have programmed the wireless modem and tested the Gasboy system remote port, if possible. CDR Tools should be loaded on both the PC end of the communications loop and a laptop PC. You should have HyperTerminal set up (with the proper configuration explained above) on both the PC and a laptop PC, if possible. These are necessary if problems arise during communication testing.

To test PC to Gasboy system communications with the wireless modems, proceed as follows:

- 1 Connect the wireless modems at both the PC and Gasboy system using the supplied cables. Ensure the cable used to connect the PC to the wireless modem matches the cable listed in [Appendix: Cable Information](#) on [page 51](#). Ensure that the Gasboy system cabling matches the system cabling as shown in [Figure 8](#) on [page 17](#), [Figure 9](#) on [page 18](#), and [Figure 11](#) on [page 19](#).
- 2 Install and connect the power pack at the PC end, and connect the DC cable at the Gasboy system end, if you have not done so already.
- 3 Connect the coaxial cable from the wireless modems to the antennas installed at either the mast or tower. Check to ensure that the mast, towers, and modems are properly grounded.
- 4 Open up the previously set up HyperTerminal, and test the communication between the PC and the Gasboy system. After confirming this communication link, close the HyperTerminal session. You are ready to test the Gasboy software package.

Diagnosing Wireless Modem Installation and Setup Issues

If there is no communication with the Hyper Terminal or the Gasboy PC Package, proceed as follows:

- 1 Verify both modems have been properly configured and the proper cables are installed and the connections are tested. Set the modems to the default parameters before programming.
- 2 Verify the coaxial connectors have been properly installed and do not short out the entire cable.
- 3 For ALL STANDARD Gasboy Fuel Management systems (Standard TopKAT, 1000 series, FleetKey and Islander II) the baud rate for all devices MUST BE 2400 BAUD. Verify the FMS system remote port is set for 2400 baud, both modems are set for 2400 baud and the Gasboy PC Software Package is set for 2400 baud.

Note: For the Gasboy PC TopKAT On Line software ONLY verify the TopKAT communication port is set for 9600 baud, both modems are set for 9600 baud and the PC TopKAT On Line software is set for 9600 baud (the TopKAT system will also have special software for use with this software package).

- 4 Verify the wireless modem settings for the system and software on the site are as per the charts provided in this manual (refer to [Programming the Wireless Modems](#) on [page 22](#)).
- 5 If the wireless communications is intermittent, for example, if you receive a few characters or one or 2 lines, once again check the modem programming. Ensure that other than the source and destination address the setup is identical. Ensure that “No Ack Back” is selected and “Preamble Bytes” is set to 266.
- 6 “In Manager Mode” may appear on the Gasboy PC Software package screen when subsequent attempts to “Contact the Site” or “Polling Session” are initiated. The time period this can occur in is approximately 5 minutes. This has been so far only noted with the standard Gasboy PC TopKAT software. It is caused by the way the wireless modems ends the “Contact the Site” or a “Polling Session”. To avoid this, ensure that the auto poll interval is set to 10 minutes. To clear this state, contact the site with Hyper Terminal and then end the session with the “EX” command.
- 7 If the wireless modems work properly with Hyper Terminal but report an error with the Gasboy Software package, for example, a “No DCD signal” use the signal tests below.

Coyote Modem and Communication Port Signal Testing

Note: The CDR 915 is compatible with the CDR 9150 modem. With the differences noted below.

- When the modem is plugged into power, it should show a YELLOW light on the front near the connector. It should also flash the GREEN light approximately once per second even if no second modem is in the area.
- If the green transmit light is not flashing, plug and unplug the power connector to the modem. This can happen if the communication cable is inadvertently disconnected and reconnected. If this continually happens, use an ohm meter to verify point-to-point connection, if necessary.
- The pin outs are referenced to a 9 pin connector for voltage measurements. Refer to the [Figure 14](#) on [page 28](#) if conversion to 25 pin outs need to be made.
- The CDR 9150 does not provide Pin 1 DCD. It provides the Pin 6 (DSR) and Pin 8 (CTS) signals. Sites that are replacing a CDR 915 with a CDR 9150 must ensure they order the new cable listed in Appendix A, [PC to Wireless Modem \(Cable made up of Q13850-15, Q13180-20B and Q13180-61\)](#) on [page 51](#) or modify the existing cable to provide the Pin 1 to Pin 6 jumper as shown in the table on [page 51](#).
- The signals between Gasboy system and modem or between PC and modem may be verified by the use of an RS-232 Breakout box. An LED will verify the presence of the individual signals. They may also be measured using a Digital Volt/Ohm Meter. Ensure that you do not short the pins. Those voltages are provided below. The wireless modem need not be connected to a PC or Fleet system for the tests below. If the wireless modem does not provide the proper communications signals, it indicates a bad modem and a new one should be ordered.
- Use Pin 5 for signal ground.
- If measured at the modem (no cable attached):
 - Pin 1 (DCD) is measured to be 6.8 VDC nominal (CDR 915 ONLY).
 - Pin 6 (DSR) is measured to be 6.8 VDC nominal.
 - Pin 8 (CTS) is measured to be 6.35 VDC nominal dropping to below 6 VDC when the GREEN transmit light flashes on the CDR 915.
- When you are using the cable mentioned in [Appendix: Cable Information](#) on [page 51](#) with Pins 1 and 6 jumpered internally, the voltage will be 6.35 VDC nominal if measured at the 9 pin connector that will plug into the PC.
- These voltages may vary slightly due to the meter used.
- The PC needs to provide two communication signals. To test these signals a communications program such as Hyper Terminal must access the communication port to be tested.

Note: The Coyote Radio Programmer software only provides the DTR signal.

- Pin 4 (DTR) Hyper Terminal and Coyote Radio Programmer software.
- Pin 7 (RTS) Hyper Terminal software only.
- Both of these signal should measure 5.5 VDC nominal.
- If these two signals are not properly provided by the PC's communication port, a problem with the PC communications port is indicated. Use a second port on the PC if available. Have the PC repaired as necessary.
- With the Wireless modem connected to the PC, all five signals (DCD, DSR, CTS, DTR and RTS) must be present for the Gasboy software to properly work with the wireless modem. All five signals are not easily verified with the cables connected without the use of a RS-232 breakout box.

Figure 14: Serial (RS-232) Port Interface Pinout and Signals Chart

Serial (RS-232) port interface pinout and signals					
9 pin #	25 pin#	Acronym	Full name	Direction	Mean
3	2	TxD	Transmit Data	—>	Transmits bytes out of PC
2	3	RxD	Receive Data	<—	Receives bytes into PC
7	4	RTS	Request To Send	—>	RTS/CTS flow control
8	5	CTS	Clear To Send	<—	RTS/CTS flow control
6	6	DSR	Data Set Ready	<—	Modem ready to communicate
4	20	DTR	Data Terminal Ready	—>	Terminal ready to communicate
1	8	DCD*	Data Carrier Detect	<—	Modem connected to another
9	22	RI	Ring Indicator	<—	Telephone line ringing
5	7	SG	Signal Ground		
*Not provided on CDR9150					

Serial-to-LAN Connection Installation

Serial-to-LAN Configuration Options

There are two options when connecting Gasboy systems to the Serial-to-LAN adapter.

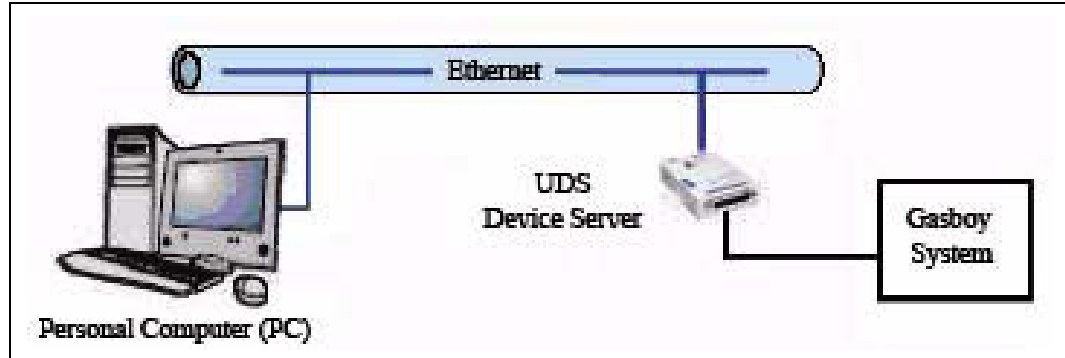
Note: In most cases, a C04532 cable (included with the kit) will be needed to connect the Serial-to-LAN adapter to the Gasboy Short Haul Modem (C05618) or Gasboy Termination Box (C05769).

TCP/IP Configuration (use M06643K001)

The first option is to use only one adapter in a Transmission Control Protocol/Internet Protocol (TCP/IP) configuration ([Figure 15](#) on [page 29](#)). With this option, the adapter is connected to one of the Gasboy system's serial ports. The user then uses a PC utility such as Telnet to open a TCP/IP communication session to the Gasboy system. In this configuration, no serial port is needed at the PC. With each adapter assigned its own IP address, one PC can be used to communicate to multiple Gasboy systems (one at a time).

Note: This configuration does not work with the Gasboy PC packages.

Figure 15: TCP/IP Configuration

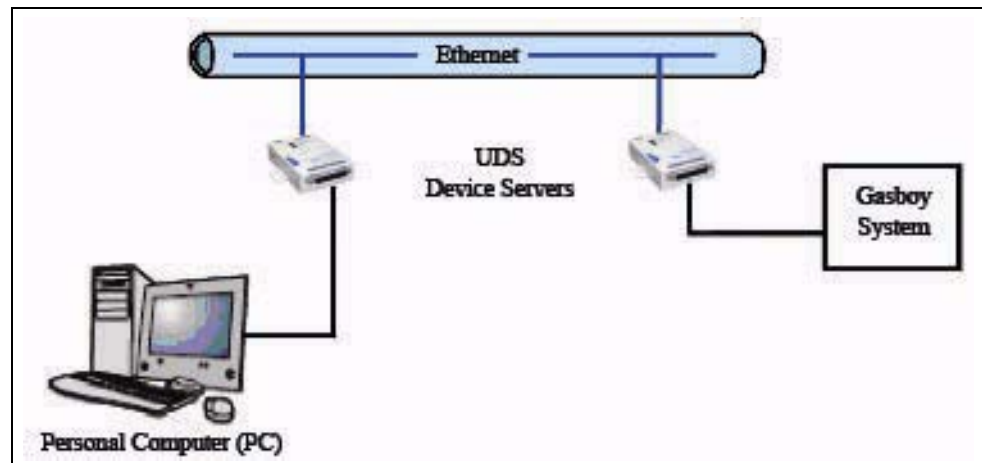


Serial Tunneling Configuration (use M06643K002)

The second option is known as the Serial Tunneling configuration (Figure 16). In this configuration, one adapter is connected to one of the Gasboy system's serial ports and a second adapter is connected to a serial port on the PC.

Note: This configuration works with Gasboy PC packages (such as PC/TopKAT, PC/1000, PC/CFN).

Figure 16: Serial Tunneling Configuration



The Serial Tunneling configuration has two modes: Direct Connect and Modem Emulation.

- When using the Direct Connect mode, the adapters create a direct connection between the PC and the Gasboy system that works as if the two (PC and system) had been hard-wired together. When the adapters are powered up, they establish a TCP/IP link between them. From that point on, anything transmitted from the PC serial port is sent directly to the Gasboy system serial port and vice versa. Using this mode, communication can only be established with one Gasboy system.

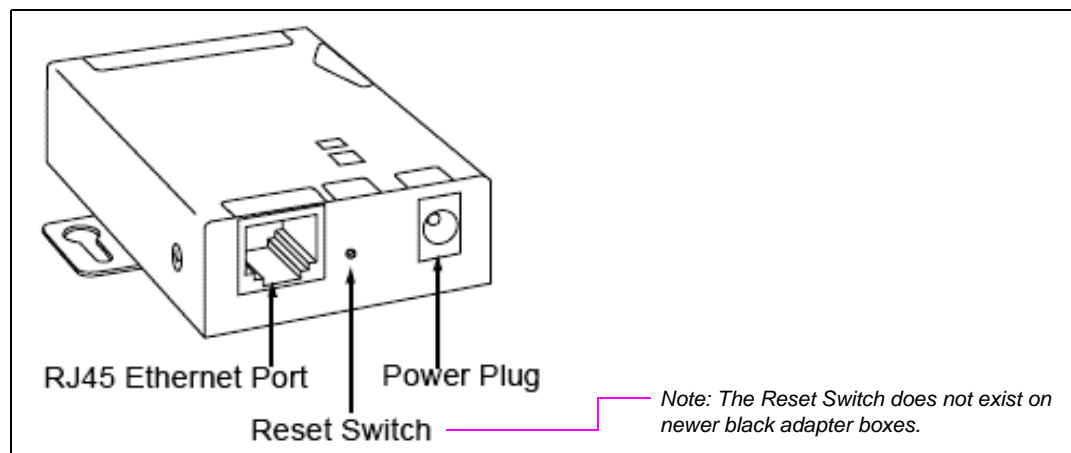
- When using the Modem Emulation mode, the adapter connected to the PC emulates a modem. The PC sends AT commands and the adapter responds as if it were a modem. However, instead of a phone number, the user must use the Gasboy system adapter IP address and port number (refer to [Accessing Adapter Parameters](#) on [page 32](#)) as the number to dial. When the IP address and port number are dialed, the adapters establish a TCP/IP link between them. At this point, they work the same as in Direct Connect mode, sending and receiving data to and from the serial ports. When the “call” is over, the adapters drop the TCP/IP connection. Using this mode allows one PC to communicate to multiple Gasboy systems (one at a time).

Adapter Connections

The Serial-to-LAN adapter ([Figure 17](#)) has a standard RJ45 Ethernet port (10Base-T), and serial port and power connection. The Ethernet port is connected to a standard Ethernet hub or LAN distribution point, usually with a CAT-5 cable.

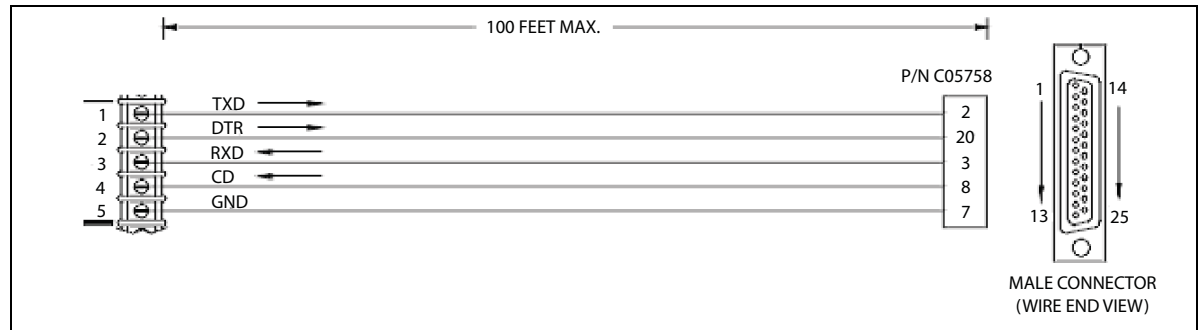
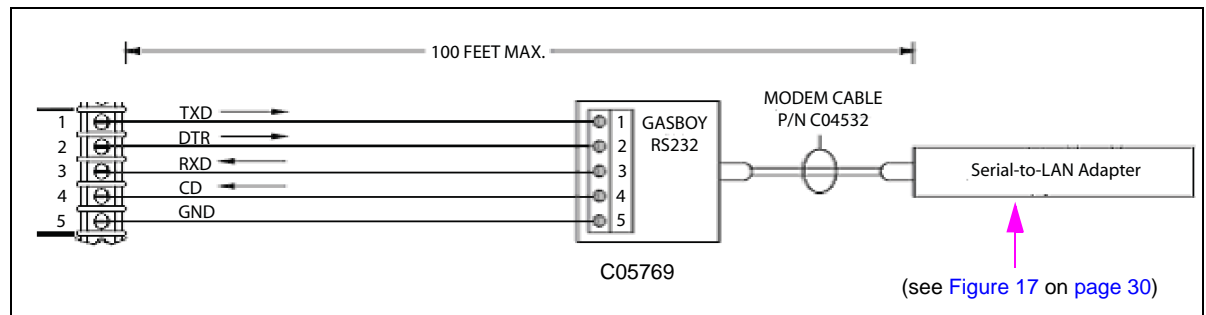
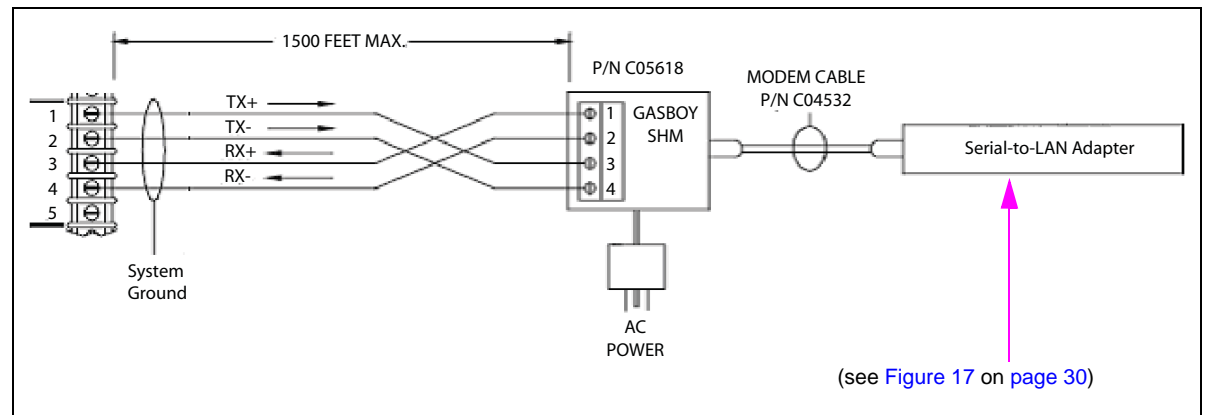
For power, connect the AC power supply to the power plug and plug in the AC supply into an outlet.

Figure 17: Serial-to-LAN Adapter



For RS-232 wiring from the Gasboy system (Series 1000, TopKAT, or Islander) to the serial port, see [Figure 18](#) on [page 31](#), [Figure 19](#) on [page 31](#) and [Figure 20](#) on [page 31](#).

Note: The terminal blocks on different Gasboy systems may appear different from the ones shown here, but the point-to-point connections and cables are the same. All requirements for RS-232 and RS-422 defined in the Gasboy system installation manuals apply to the wiring between the system and Serial-to-LAN adapter as well.

Figure 18: RS-232 D-Type Connector**Figure 19: RS-232 Gasboy Termination Box****Figure 20: RS-422 Gasboy Short Haul Modem****CFN 3 Connection**

To connect to a CFN 3, use a C05995 modem cable from Port 4, 5, or 6 of the CFN 3 to the serial-to-LAN adapter.

RS-232 PC Connection

To connect the adapter to a serial port of a PC, use a standard PC-to-modem cable (Q13240-09). Connect it from the PC serial port to the serial port on the adapter.

Accessing Adapter Parameters

The IP Address

Certain parameters must be configured before the adapter can function. The first parameter that must be defined is the Internet Protocol (IP) address. Every device connected to a TCP/IP network must have a unique IP address. The IP address must be configured before a network connection is available.

- If your network is not and will not be connected to the Internet, you may use any IP address.
- If your network is connected or will be connected to the Internet, or if you intend to operate the Serial-to-LAN adapter on an intranet, you should consult your Network Administrator with questions about IP address assignments. The adapter ships with a default IP address of 0.0.0.0, which automatically enables Dynamic Host Configuration Protocol (DHCP).
 - If your network has a DHCP server, it will supply the adapter with an IP address, gateway address, and subnet mask when the adapter powers up
 - For Model UDS10, refer to [Configuring the Adapter from the Web Browser Login – Model UDS10](#) on [page 32](#).
 - For Model UDS1100, refer to [Configuring the Adapter from the Web Browser Login – Model UDS1100](#) on [page 33](#).
 - If the IP address is not set automatically via DHCP, it can be set using a serial port login and setup menu (refer to [Configuring the Adapter from the Serial Port Login – UDS10 or UDS1100](#) on [page 35](#)).

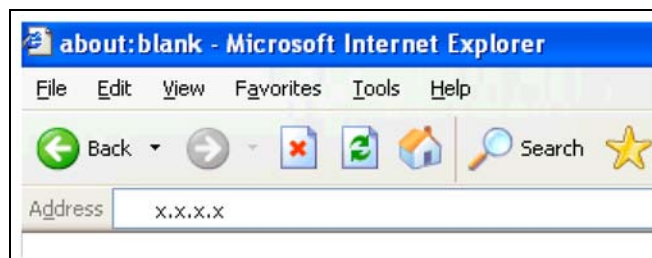
Configuring the Adapter from the Web Browser Login – Model UDS10

If your network has a DHCP server that has assigned an IP address to the adapter, or if an IP address has been previously assigned, you can log into it using a standard Web browser with Java® enabled. Consult with your Network Administrator for the device IP address or identification assigned by the DHCP server to the adapter for this connection.

To configure the Adapter from the web browser login, proceed as follows:

- 1 Type the adapter IP address into the Web browser URL (Address/Location) field ([Figure 21](#)).

Figure 21: Web Browser Address Field



- 2 Click **Connect** to log in and gain access to the configuration menu.

- 3 Use the menu buttons to navigate to sub-pages where you can configure adapter settings (Figure 22) and configure the settings.

Figure 22: Lantronix Server and Port Configuration Screen – Model UDS10

Server Configuration	
Product	Lantronix Universal Device Server
Model	Ethernet 1 Channel
Firmware Version	V5.80
Serial Number	5433451
Hardware Address	00-20-4A-54-82-AB
IP Address	10.28.46.51
Subnet Mask	255.255.255.0
Gateway Address	10.28.46.1

Port Configuration	
	Channel 1
Local Port Number	10001
Serial Port Speed	9600
Flow Control	00
Interface Mode	4C
Connect Mode	C0
Disconnect Mode	00
Flush Mode	00
UDP Datagram Type	Disabled
Pack Control Byte	Disabled

Configuring the Adapter from the Web Browser Login – Model UDS1100

If your network has a DHCP server that has assigned an IP address to the adapter, or if an IP address has been previously assigned, you can log in using a standard Web browser with Java enabled. Consult with your Network Administrator for the device IP address or identification assigned by the DHCP server to the adapter for this connection.

To configure the Adapter from the web browser login, proceed as follows:

- 1 Type the adapter IP address into the Web browser URL (Address/Location) field (Figure 23).

Figure 23: Web Browser Address Field

- 2 Click **Connect** to log in and gain access to the configuration menu.

- 3 Use the menu buttons to navigate to Channel 1 sub-pages where you can configure adapter settings (Figure 24 and Figure 25 on page 35) and configure the Channel 1 settings.

Figure 24: Lantronix Channel 1 Serial Settings Screen – Model UDS1100

Lantronix Device Server - Microsoft Internet Explorer

Address: http://10.28.46.51/secure/ltx_conf.htm

LANTRONIX® Firmware Version: V6.1.0.1
MAC Address: 00-20-4A-9B-01-78

Serial Settings

Channel 1
☐ Disable Serial Port

Port Settings
Protocol: RS232 Flow Control: Xon/Xoff Pass Chars to Host
Baud Rate: 9600 Data Bits: 8 Parity: None Stop Bits: 1

Pack Control
☐ Enable Packing
Idle Gap Time: 12 msec
Match 2 Byte Sequence: ☐ Yes ☒ No
Match Bytes: 0x00 0x00 (Hex)
Send Frame Only: ☐ Yes ☒ No
Send Trailing Bytes: ☒ None ☐ One ☐ Two

Flush Mode
Flush Input Buffer
With Active Connect: ☐ Yes ☒ No
With Passive Connect: ☐ Yes ☒ No
At Time of Disconnect: ☒ Yes ☐ No
Flush Output Buffer
With Active Connect: ☐ Yes ☒ No
With Passive Connect: ☐ Yes ☒ No
At Time of Disconnect: ☒ Yes ☐ No

OK

Figure 25: Lantronix Channel 1 Connection Settings Screen – Model UDS1100

Lantronix Device Server - Microsoft Internet Explorer

Address: http://10.28.46.51/secure/ltx_conf.htm

LANTRONIX® Firmware Version: **V6.1.0.1**
MAC Address: **00-20-4A-9B-01-78**

Connection Settings

Channel 1

Connect Protocol
Protocol: **TCP**

Connect Mode

Passive Connection:
Accept Incoming: **Yes**
Password Required: ☐ Yes ☒ No
Password:

Active Connection:
Active Connect: **None**
Start Character: **0x0D** (in Hex)
Modem Mode: **None**
Modem Escape Sequence Pass Through: ☒ Yes ☐ No

Endpoint Configuration:
Local Port: **23** ☐ Auto increment for active connect
Remote Port: **0** Remote Host: **0.0.0.0**

Common Options:
Telnnet Mode: **Enable** Connect Response: **None**
Terminal Name: Use Hostlist: ☐ Yes ☒ No LED: **Blink**

Disconnect Mode
On Mdm_Ctrl_In Drop: ☒ Yes ☐ No Hard Disconnect: ☒ Yes ☐ No
Check EOT(Ctrl-D): ☐ Yes ☒ No Inactivity Timeout: **0** : **0** (mins : secs)

Configuring the Adapter from the Serial Port Login – UDS10 or UDS1100

To configure the Adapter from the serial port login, proceed as follows:

- 1 Connect a terminal or PC running a Terminal Emulation program to the serial port of the adapter. The default serial port settings are 9600 baud, 8 bits, no parity, 1 stop bit.
- 2 To enter Setup (Configuration) mode, cycle power (power off and back on) on the adapter. After power-up, the self-test begins and the red diagnostic LED starts blinking. You will have one second to enter three lowercase “x” characters.
Note: The easiest way to enter the Setup mode is to hold down the “x” key at the terminal (or Emulation Program) while powering up the adapter.
- 3 When “Press Enter for Setup Mode” appears, press **ENTER**.
The display in the Setup menu is as shown in the following figures.
 - [Figure 26](#) on [page 37](#) for Model UDS10
 - [Figure 27](#) on [page 38](#) for Model UDS1100

- 4 To make changes, enter the number assigned to the parameters to be changed and follow the prompts until all information has been entered. All parameters **not** listed in the table on [page 39](#), [page 41](#), and [page 41](#) should be left at their default values.
 - When a parameter prompt is displayed, the current value is shown in parentheses at the end of the prompt. To change the value, type the new value and press **ENTER**.
 - If you do not want to change the existing value of a parameter, just press **ENTER** without entering any data.
- 5 Once you have set the parameters you wish to change, enter “9” and press **ENTER** to save the changes.

*Note: Changes are not saved until you save them (that is, entering 9 and then pressing **ENTER**).*

If your network has a DHCP server that has assigned an IP address to the adapter, or if an IP address has been previously assigned, you can access the setup menu ([Figure 26](#) on [page 37](#) or [Figure 27](#) on [page 38](#)) by using Telnet.

To access via Telnet, open a Telnet connection to port 9999.

Consult with your Network Administrator for the device IP address or identification assigned to the adapter for the Telnet connection.

Figure 26: Serial-to-LAN Server Setup Menu (Sample) – Model UDS10

```

*** Lantronix Universal Device Server ***
Serial Number 5433451 MAC address 00204A5482AB
Software version V5.8.0.1 (041112) LTX

Press Enter for Setup Mode

```

Step 3

```

*** basic parameters
Hardware: Ethernet TPI
IP addr 0.0.0.0, no gateway set

*** Security
SNMP is enabled
SNMP Community Name: public
Telnet Setup is enabled
TFTP Download is enabled
Port 77FEh is enabled
Web Server is enabled
ECHO is enabled
Enhanced Password is disabled

*** Channel 1
Baudrate 9600, I/F Mode 4C, Flow 00
Port 10001
Connect Mode: C0
Auto increment source port disabled
Remote IP Adr:--- none ---, Port 00000
Disconn Mode: 00
Flush Mode: 00

*** Expert
TCP Keepalive : 45s
ARP cache timeout: 600s
Monitor Mode @ bootup: enabled
HTTP Port Number: 80

Change Setup:
 0 Server configuration
 1 Channel 1 configuration
 5 Expert settings
 6 Security
 7 Factory defaults
 8 Exit without save
 9 Save and exit

```

Step 4

Your choice ?

Step 4 and Step 5

Note: If "Change Setup: 9 Save and exit" is selected, the settings are saved and the system reboots.

Figure 27: Serial-to-LAN Server Setup Menu (Sample) – Model UDS1100

```
*** Lantronix Universal Device Server ***
MAC address 00204A9B0178
Software version V6.1.0.1 (060120) UDS1100

Press Enter for Setup Mode
```

Step 3

```
*** basic parameters
Hardware: Ethernet TPI
IP addr 0.0.0.0/DHCP/BOOTP/AutoIP, no gateway set
DHCP device name: not set

*** Security
SNMP is          enabled
SNMP Community Name: public
Telnet Setup is  enabled
TFTP Download is enabled
Port 77FEh is    enabled
Web Server is    enabled
Web Setup is     enabled
ECHO is          disabled
Enhanced Password is disabled

*** Channel 1
Baudrate 9600, I/F Mode 4C, Flow 00
Port 10001
Connect Mode: C0
Send '+++' in Modem Mode enabled
Auto increment source port disabled
Remote IP Adr:--- none ---, Port 00000
Disconn Mode: 00
Flush Mode: 00
Terminal name:

*** Expert
TCP Keepalive   : 45s
ARP cache timeout: 600s
Monitor Mode @ bootup: enabled
HTTP Port Number: 80
MTU Size: 1400
Alternate MAC: disabled
Ethernet connection type: auto-negotiate

Change Setup:
 0 Server
 1 Channel 1
 5 Expert
 6 Security
 7 Defaults
 8 Exit without save
 9 Save and exit
```

Step 4

Your choice ?

Step 4 and Step 5

Note: If "Change Setup: 9 Save and exit" is selected, the settings are saved and the system reboots.

Settings for the Adapter Connected to the Gasboy System

Once you have access to the setup menu ([Figure 26 on page 37](#) or [Figure 27 on page 38](#)), the following parameters must be set to the value listed for the adapter connected to the Gasboy system. All other values should be left at their default values. To view/edit the parameters below, enter “1” at the “**Your choice?**” prompt and press **ENTER**.

Parameter (Figure 26 on page 37)	Value	Definition
Baud rate	Set to match baud rate of the port to which the adapter is connected	9600 is the default value
I/F Mode	4C	RS-232C, 8 bits, no parity, 1 stop bit
Flow	05	XON/OFF pass characters to host
Port	(see note below)	Range: 1 - 65535
Connect Mode	C0	Accept unconditional, no active startup
Disconn Mode	C0	Disconnect with DTR drop, Telnet mode
Flush Mode	44	Input buffer - clear at disconnect Output buffer - clear at disconnect

Note: Every TCP connection is defined by a destination IP address and port number. For example, a Telnet application commonly uses port number 23. A port number is similar to an extension on a private branch exchange (PBX) telephone system. A range of port numbers are available: 1 - 65535. Port numbers 0, 7, and 9999 are reserved and must not be assigned to the adapter.

After the parameters have been changed, you can press **ENTER** at the “**Your choice?**” prompt to display the current values. Remember to save the settings once they are set correctly (see below).

Consult with your Network Administrator for changes to the IP address, gateway address, subnet mask, or security changes. To change IP address, gateway address, subnet mask parameters, enter “0” at the “**Your choice?**” prompt and then press **ENTER**. To change security parameters, enter “6” at the “**Your choice?**” prompt and then press **ENTER**. Remember to save the settings once they are set correctly.

Once the parameters are set correctly, save the settings and exit setup by entering “9” at the prompt and then press **ENTER**.

Settings for the Adapter Connected to a PC

If you are using the Serial Tunneling option, you will also have a Serial-to-LAN adapter connected to a serial port on a PC. As described in [Serial-to-LAN Configuration Options on page 28](#), there are two modes:

- **Direct connection** - virtual hard-wired serial connection
- **Modem emulation** - allows PC to “dial” the Gasboy system via a LAN connection

Direct Connect Mode

For the Direct Connection mode, the following parameters must be set to the value listed for the adapter connected to the PC. To view/edit the parameters below, enter “1” at the “Your choice?” prompt and press **ENTER**.

Parameter (Figure 26 on page 37)	Value	Definition
Baud rate	Set to match the baud rate of the Gasboy system port to which the adapter is connected	9600 is the default value
I/F Mode	4C	RS-232C, 8 bits, no parity, 1 stop bit
Flow	05	XON/OFF pass characters to host
Port	(see note below)	Range: 1 - 65535
Connect Mode	C5	Accept unconditional, auto start
Remote IP Adr	Set to IP address assigned to Gasboy system adapter	IP address to link to at startup
(Remote) Port	Set to port assigned to Gasboy system adapter	Port to connect to when link is established
Disconn Mode	C0	Disconnect with DTR drop, Telnet mode
Flush Mode	44	Input buffer - clear at disconnect Output buffer - clear at disconnect

Note: Every TCP connection is defined by a destination IP address and port number. For example, a Telnet application commonly uses port number 23. A port number is similar to an extension on a PBX telephone system. Range of port numbers available: 1 - 65535. Port numbers 0, 7, and 9999 are reserved and must not be assigned to the adapter.

After the parameters have been changed, you can press **ENTER** at the “Your choice?” prompt to display the current values. Remember to save the settings once they are set correctly (see below).

Consult with your Network Administrator for changes to the IP address, gateway address, subnet mask, or security changes. To change IP address, gateway address, subnet mask parameters, enter “0” at the “Your choice?” prompt and then press **ENTER**. To change security parameters, enter “6” at the “Your choice?” prompt and then press **ENTER**.

Once the parameters are set correctly, save the settings and exit setup by entering “9” at the prompt and then press **ENTER**.

Modem Emulation Mode

For the Modem Emulation mode, the following parameters must be set to the value listed for the adapter connected to the PC. To view/edit the parameters below, enter “1” at the “**Your choice?**” prompt and press **ENTER**.

Parameter (Figure 26 on page 37)	Value	Definition
Baud rate	Set to match the baud rate of the Gasboy system port to which the adapter is connected	9600 is the default value
I/F Mode	4C	RS-232C, 8 bits, no parity, 1 stop bit
Flow	05	XON/OFF pass characters to host
Port	(see note below)	Range: 1 - 65535
Connect Mode	16	Modem mode with echo (06 for no echo)
Disconn Mode	C0	Disconnect with DTR drop, Telnet mode
Flush Mode	44	Input buffer - clear at disconnect Output buffer - clear at disconnect

Note: Every TCP connection is defined by a destination IP address and port number. For example, a Telnet application commonly uses port number 23 (a port number is similar to an extension on a PBX-style telephone system). Range of port numbers available: 1 - 65535. Port numbers 0, 7, and 9999 are reserved and must not be assigned to the adapter.

After the parameters have been changed, you can press **ENTER** at the “**Your choice?**” prompt to display the current values. Remember to save the settings once they are set correctly (see below).

Consult with your Network Administrator for changes to the IP address, gateway address, subnet mask, or security changes. To change IP address, gateway address, subnet mask parameters, enter “0” at the “**Your choice?**” prompt and then press **ENTER**. To change security parameters, enter “6” at the “**Your choice?**” prompt and then press **ENTER**.

Once the parameters are set correctly, save the settings and exit setup by entering “9” at the prompt and then press **ENTER**.

Default the Adapter Parameter Values

If you have changed and saved a parameter not listed above or if you are unsure if the values are set correctly, it may be necessary to default the parameter values. To default the values, access the setup menu, enter “7” at the “**Your choice?**” prompt, and then press **ENTER**. Enter “9” at the “**Your choice?**” prompt, and then press **ENTER**. This will save the default values. You must then go back and set the parameter values correctly. Remember to save the settings once they are set correctly.

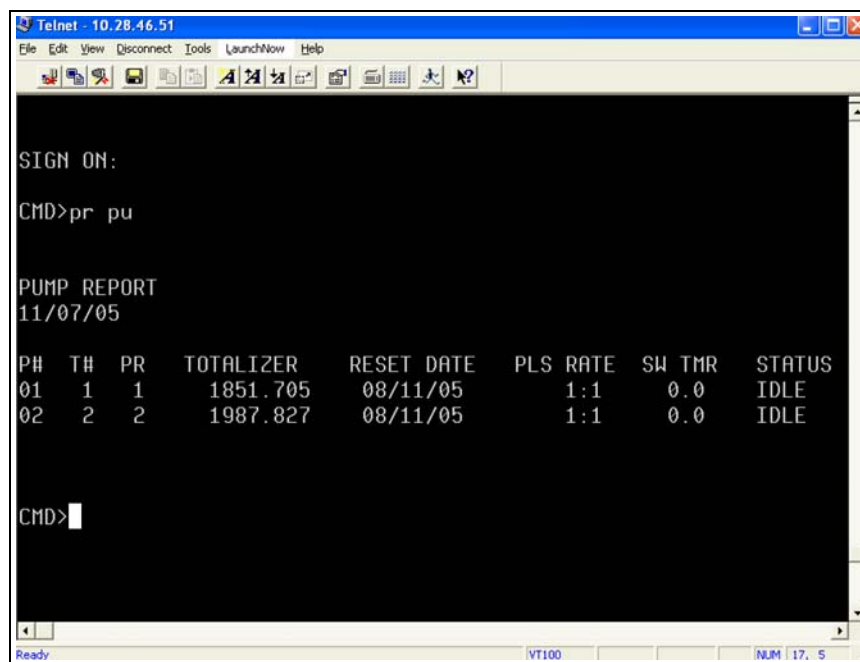
Verifying the Connectivity to the Serial-to-LAN Adapter

Verifying the Connectivity from the Telnet Program

Connectivity can be verified using a program such as Telnet (Figure 28). When starting the session, the program being used usually requires the IP address and port number. Enter the IP address and port number set in the adapter connected to the Gasboy system.

If you are using Serial Tunneling in a Direct Connect mode, the adapter connected to the serial port of the PC must be turned off before you can verify connectivity to the Gasboy system adapter using this method.

Figure 28: Telnet Screen



Verifying the Connectivity from Terminal Emulation Program

If you are using Serial Tunneling option, you can verify connectivity between the Gasboy system and PC adapters using a terminal emulation program such as Hyper Terminal.

When you use a terminal emulation program such as Hyper Terminal (adapter in Direct Connect or Modem mode), you will need to open the COM port that the adapter is connected to on the PC. You will also need to match the communication parameters set on the adapter (baud rate, number of bits, parity, stop bits). All Gasboy systems use the same communication parameters: 8 bits, no parity, 1 stop bit. The baud rate should be set to match the port on the Gasboy system.

If you are using the Direct Connect mode, start the terminal emulation session and you should be able to communicate to the Gasboy system just as if it were directly connected to the COM port.

When you use modem emulation, use the IP address and port number of the Gasboy system adapter as the number to dial. A comma or a back-slash must separate the IP address and port number. For example, to connect to a Gasboy system with an IP address 10.28.46.51 and port number of 1001, enter the number to dial as 10.28.46.51,1001 or 10.28.46.51/1001.

Using the example and connecting via a program such as Hyper Terminal, a command ATDT10.28.46.51,1001 is issued to contact the Gasboy system.

When you use a Gasboy PC package (such as PC/TopKAT, PC/1000, PC/CFN) with modem emulation, use IP address and port number for the “Phone Number” to dial. In the package setup, select the Gasboy Default Modem. For the site phone number, enter the IP address and port number as shown in [Figure 29](#).

Figure 29: Gasboy PC Package Screen

The screenshot displays the 'Fuel System Type : TOPKAT' window. The fields are as follows:

- Site Number :** 0001
- Site Name/Location :** Gasboy TopKat
- Site Terminal Manager Password :** [REDACTED]
- Next Transaction :** 589
- Autopoll Flag :** ☐ NO ☒ YES
- Last Successful Poll Date/Time :** 10/25/2005 9:41:45 AM
- Connection Type :** ☐ Direct Connection ☒ Modem Connection
- Comm Port :** COM2
- Baud Rate :** 9600
- Phone Number :** 10.28.46.51,1001 (This field is circled in pink, with a line pointing to a note on the right.)
- Notes :** [Empty text area]

Buttons at the bottom: Help, Close.

Sample "Phone Number" (IP address and port number)

Diagnosing Gasboy System Serial to LAN Connections

In order to diagnose some of the serial to LAN issues, the following items are needed:

1	Laptop or test PC with an Ethernet and serial COM port that can run HyperTerminal and/or Telnet (or something similar). Telnet is included with most Windows operating systems.
1	9 to 25 modem cable (Q13240-09 or equivalent)
1	CAT-5 crossover cable (Q13850-C06 or equivalent)
1	C04532 RS-232 modem cable
1	AC terminal strip

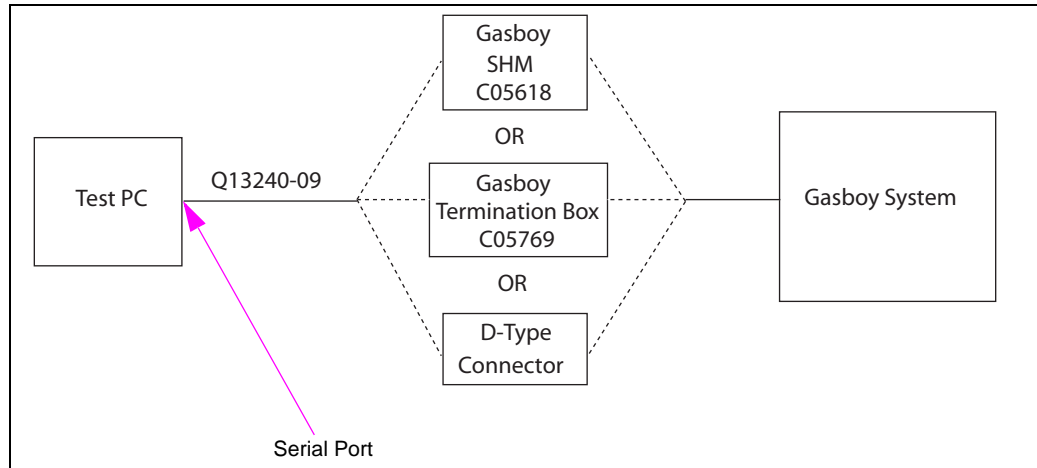
It may also be necessary to have two more Serial to LAN adapters, a Gasboy Short Haul Modem, a null modem adapter, and 25-pin D-type gender adapters.

If you have the IP and port address from the Network Administrator (or other IT personnel), use those values for testing any issues.

- 1 To verify the communication to Gasboy system (for example, Gasboy Short Haul Modem or Direct Connect), set up a HyperTerminal session (or other terminal emulation software session) with the following parameters:

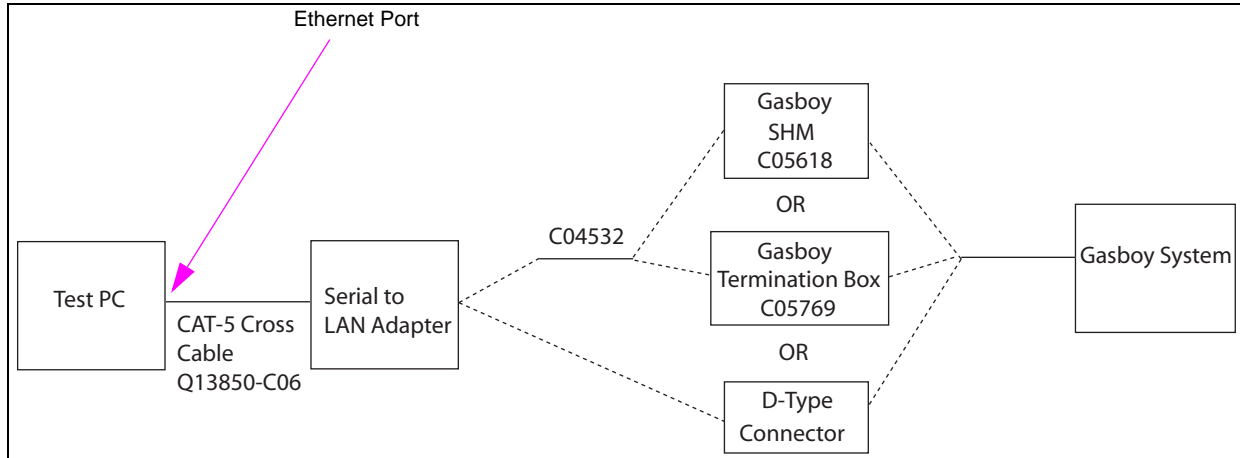
Baud	Set to match the Gasboy system port being used (normally 9600 baud).
Data bits	8
Parity	None
Stop Bits	1
Flow Control	None or Xon/Xoff
Emulation	auto
Connect using	COM port on PC

- 2 Use the 9 to 25-pin modem cable (Q13240 09 that was supplied with the kit), connect test PC COM Port to SHM or termination box or D-type connector (you will need a null modem adapter and possibly a gender adapter to connect to the D-type connector, see [Figure 18](#) on [page 31](#)) and verify you can sign on and run system commands. You must be able to communicate with the system at this level before going forward.

Figure 30: Test PC to Gasboy System Connections

- 3 Disconnect the 9 to 25 modem cable from the SHM or termination box or D-type connector and connect it to one of the serial to LAN adapters.
- 4 Using a terminal session (for example, HyperTerminal) with settings 9600, 8, N, 1, verify the adapter is set up as described in [Settings for the Adapter Connected to the Gasboy System](#) on [page 39](#). Verify the IP address and port number are set to the values supplied by the Network Administrator (or other IT personnel). If they are not supplied, use a temporary value of IP address 192.168.1.101 and port 1001. Also, verify the baud rate matches the Gasboy system. Close the terminal session. Mark this adapter Gasboy FMS.
- 5 Disconnect the modem cable from the adapter. Connect the adapter to a C04532 (use the cable supplied with the kit, if possible). Connect the other end of the C04532 to the SHM or termination box that was tested in step 2 above. If you are using a D-type connector (see [Figure 18](#) on [page 31](#)), connect it to the serial to LAN adapter.
- 6 Using the CAT-5 cross cable, connect to the RJ45 jack on the adapter. Connect the other end to the Ethernet port on the test PC. Ensure that the test PC IP address is not the same the address configured in the adapter.

Figure 31: Test PC to Gasboy System Connections through the LAN Adapter



- 7 At the Test PC, open a command prompt session. At the command prompt, type the command ping followed by the IP address for the Gasboy system adapter (for example, ping 192.168.1.101) and then press **ENTER**. Verify there are a series of Reply from messages and no errors. If errors are returned, ensure the adapter is powered and check the cross cable connection. It may be necessary to change the Test PC IP address so that the first three sets of numbers are the same as the adapter IP address (for example, 192.168.1). If errors are still being returned, try another adapter.

Figure 32: Ping Session

```
C:\> Command Prompt

C:\>ping 192.168.1.101

Pinging 192.168.1.101 with 32 bytes of data:

Reply from 192.168.1.101: bytes=32 time=1ms TTL=64
Reply from 192.168.1.101: bytes=32 time=1ms TTL=64
Reply from 192.168.1.101: bytes=32 time=1ms TTL=64
Reply from 192.168.1.101: bytes=32 time=1ms TTL=64

Ping statistics for 192.168.1.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\>_
```

- 8 Start a HyperTerminal or Telnet session (or other software session similar to HyperTerminal or Telnet). For HyperTerminal, connect using TCP/IP (Winsock). If this selection is not available, HyperTerminal will not work for this test. You will have to use Telnet or something similar. When prompted for host address and port number, use the Gasboy system adapter IP address and port number (for example, telnet 192.168.1.101 1001 at the command prompt would connect to an adapter with IP address 192.168.1.101 and port number 1001). Verify you can sign on to the Gasboy system and run system commands. If unable to connect, ensure the adapter and Gasboy system are powered. Check cable connection from the Gasboy system to the adapter and the adapter to PC. Check the system baud rate is set correctly for the port being used. It may be necessary to default all the adapter settings and re-load them (refer to [Accessing Adapter Parameters](#) on [page 32](#)). If still unable to connect, try replacing the adapter. You must be able to communicate with the Gasboy system at this level before going forward.

Figure 33: HyperTerminal Setup

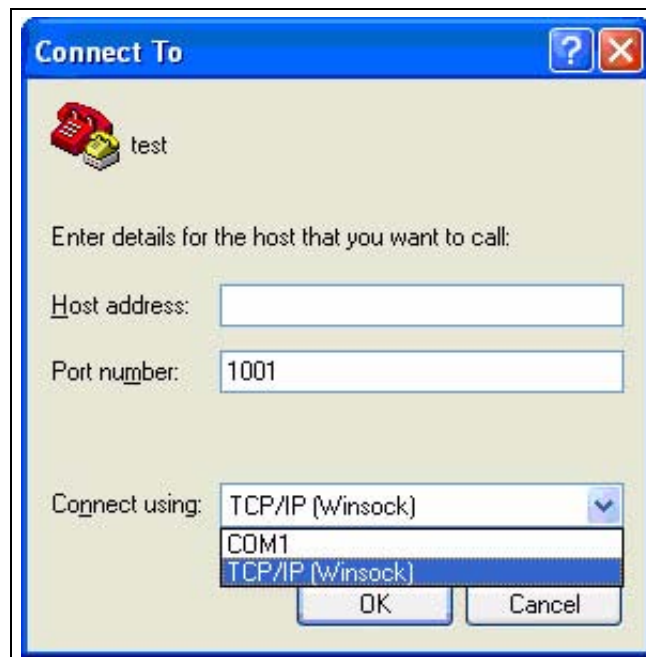
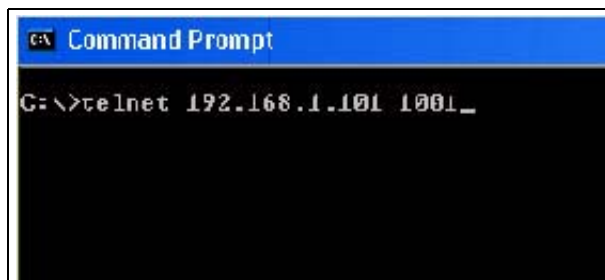
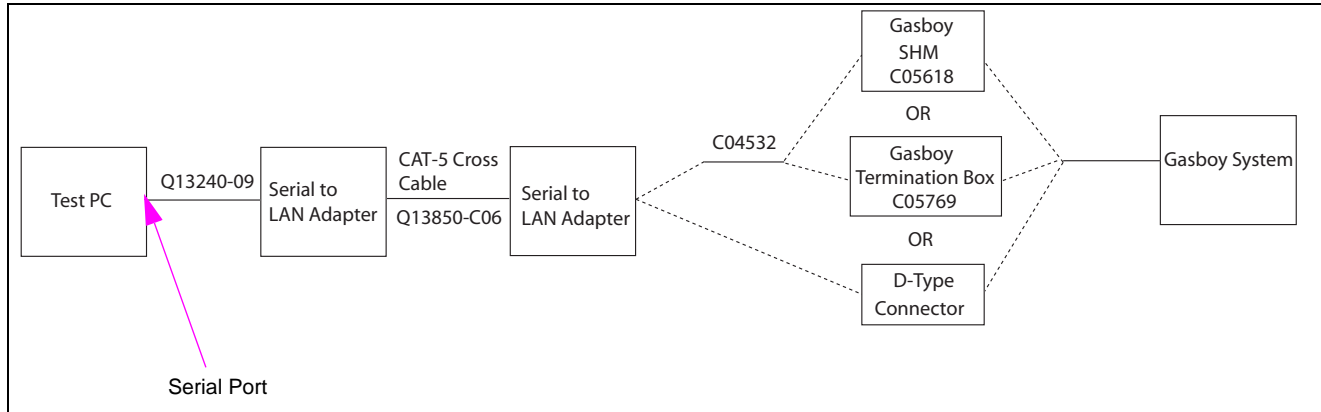


Figure 34: Telnet Session



- 9 Close the terminal or Telnet session. Close the command prompt session if still open. Disconnect the CAT-5 cross cable from the Test PC. If you are using the TCP/IP configuration (refer to [page 28](#)), skip to step 15.
- 10 Connect the CAT-5 cross cable to the second Serial to LAN adapter. Connect the modem cable (9 to 25) to that Serial to LAN adapter.

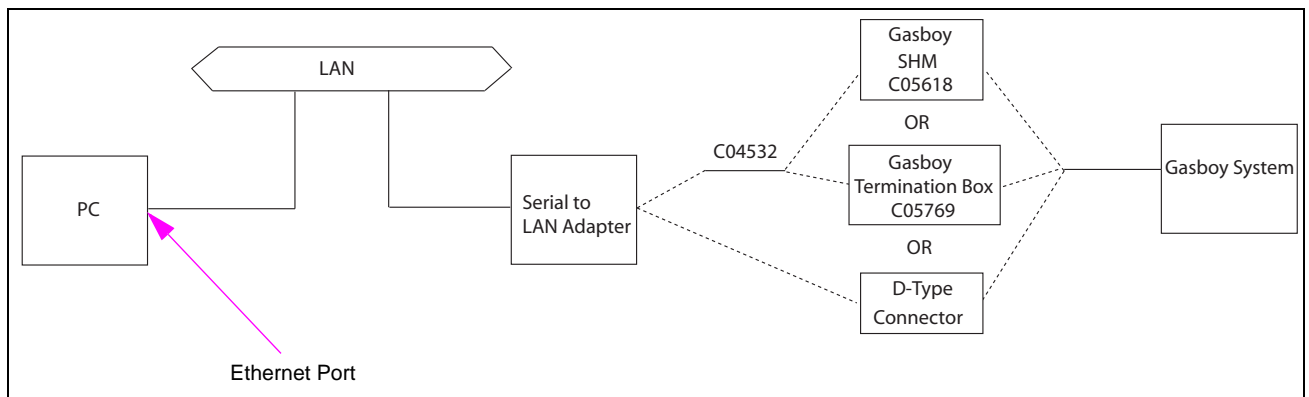
Figure 35: Test PC to Gasboy System Connections through Two LAN Adapters



- 11 Using a terminal session (for example, HyperTerminal) with settings 9600, 8, N, 1, verify the adapter is set up as described in [Settings for the Adapter Connected to a PC](#) on [page 39](#) (use Direct Connect Mode for this test). Verify the IP address and port number are set to the values supplied by the Network Administrator (or other IT personnel). If they are not supplied, use a temporary value of IP address 192.168.1.102 and port 1001. Verify the remote IP address and remote port number are set to match the values of the Gasboy system adapter. Also, verify the baud rate matches the Gasboy system. Mark this adapter PC.
- 12 In the terminal session, click the disconnect button (If no disconnect button is available in your terminal session, close the session). If necessary, change the baud rate to match the Gasboy system (it may be necessary to close and re-open HyperTerminal for this change to take affect). Click the connect button (If no connect button is available in your terminal session, re-start the terminal session). Verify you can sign on to the Gasboy system and run system commands. If unable to connect, ensure the adapter and Gasboy system are powered. Check cable connection from the Gasboy system to the adapter, adapter to adapter, and the adapter to PC. Check the system baud rate is set correctly for the port being used. It may be necessary to default all the adapter settings and re-load them (refer to [Accessing Adapter Parameters](#) on [page 32](#) section in this manual). If still unable to connect, try replacing the adapter. You must be able to communicate with the Gasboy system at this level before going forward.
- 13 If you are using Direct Connect Mode, close the terminal session and skip to step 16. If you are using Modem Emulation Mode, repeat step 11 above (except follow the setting in Modem Emulation Mode sub-section for this test). Ensure to load zeros for the remote IP address and port number.

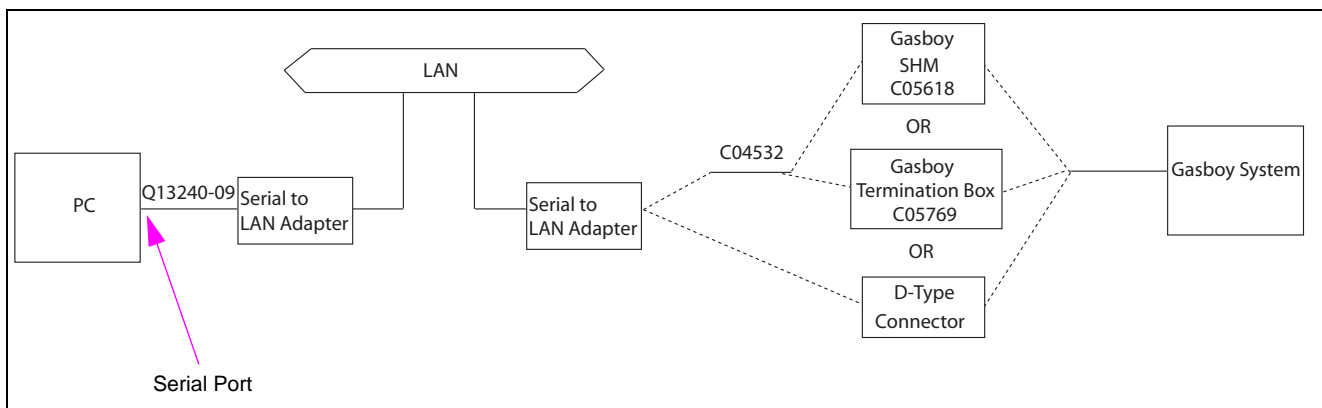
- 14 In the terminal session, click the disconnect button (if no disconnect button is available in your terminal session, close the session). If necessary, change the baud rate to match the Gasboy system (it may be necessary to close and re-open HyperTerminal for this change to take affect). Click the connect button (if no connect button is available in your terminal session, re-start the terminal session). Type **AT** and then press **ENTER**. Verify you get an OK response. Type **ATDT** followed by the IP address and port number of the adapter connected to the Gasboy system. The IP address and port number must be separated by a comma or back-slash (for example, ATDT192.168.1.101,1001 or ATDT192.168.1.101/1001). Verify you can sign on to the Gasboy system and run system commands. If unable to connect, ensure the adapter and Gasboy system are powered. Check cable connection from the Gasboy system to the adapter, adapter to adapter, and the adapter to PC. Check the system baud rate is set correctly for the port being used. It may be necessary to default all the adapter settings and re-load them ([Accessing Adapter Parameters](#) on [page 32](#) section in this manual).
- 15 Exit command mode and type **AT** and then press **ENTER**. Verify the OK response. If the Gasboy system responds, there may be a problem with the C04532 cable or connection to the Gasboy system. Replace the cable or correct connection problem and repeat this test. Close the terminal session.
- 16 Disconnect the CAT-5 cross cable from the adapter(s). Connect the Gasboy system adapter (marked Gasboy FMS) to the LAN. If you loaded a temporary IP address and port number, contact the Network Administrator (or IT personnel) to verify the values are compatible with the LAN. Change these values if necessary. Using a PC on the LAN, repeat steps 7 and 8 above, using new IP address and port number if they have changed. If a PC is not available, connect the laptop or test PC to the LAN, if possible. If these tests fail when connected to the LAN, it may be a LAN security issue. The Network Administrator or IT personnel will need to investigate and/or make changes.

Figure 36: PC to Gasboy System Connections through LAN and LAN Adapter



- 17** If you are using the TCP/IP configuration (refer to [page 28](#)), skip this step. Connect second adapter (marked PC) to the LAN. If you loaded a temporary IP address and port number, contact the Network Administrator (or IT personnel) to verify the values are compatible with the LAN. Change these values if necessary. This adapter should also be connected to the PC that will be used for communicating to the Gasboy system via the Q13240-09 cable that was supplied with the kit. If you are using Direct Connect Mode, start a terminal session (for example, HyperTerminal) on the communication PC, repeat step [12](#) above. If you are using Modem Emulation Mode, start a terminal session (for example, HyperTerminal) on the communication PC, repeat step [14](#) above. If these tests fail when connected to the LAN, it may be a LAN security issue. The Network Administrator or IT personnel will need to investigate and/or make changes.

Figure 37: PC to Gasboy System Connections through LAN and Two LAN Adapters



Appendix: Cable Information

PC to Wireless Modem (Cable made up of Q13850-15, Q13180-20B and Q13180-61)

DB9/F	Wireless Modem DB9/M
8	8
3	3
2	2
4	4
5	5
1, 6	6
7	7

TopKAT Port 2 or 3 to Laptop Direct Cable

Port 2 or 3	DB9/F
1	2
2	1,6,8
3	3
4	4
5	5

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MDE-4520C Enhanced Communications Installation Manual · February 2008