

# **DSX-Modems Installation Manual**

**November 2021**

## **Compliance Information**

Information contained within this document was known to be true at the time of printing. This information is subject to change any time without notice.

DSX is a registered trademark of DSX Access Systems Inc, WinDSX is a trademark of DSX Access Systems Inc.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This document is a team effort by the Technical Support and Engineering Group at DSX Access Systems, Inc.

All DSX manufactured products are warranted against defects in materials and workmanship for two (2) years from date of shipment. Products not manufactured by DSX are warranted for one (1) year. DSX Access Systems, Inc., will repair or replace products that prove defective and are returned to DSX freight prepaid within the warranty period. The foregoing warranty shall not apply to defects resulting from misuse, accident, alteration, neglect, improper installation, unauthorized repair, or Acts of Nature. DSX shall have the right of final determination as to the existence and causes of the defect.

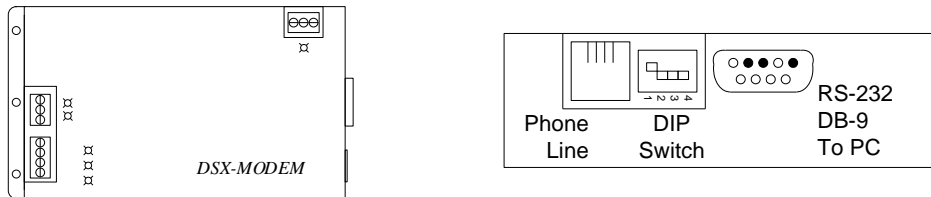
No other warranty, whether written or oral is expressed or implied.

This manual covers all three models of modem provided by DSX over the years.

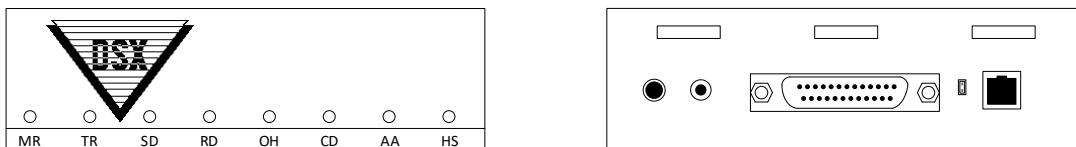
The Zoom Modem is the most current and the first section covers the modem below.



The DSX Modem below is in a classic black DSX metal enclosure.



This modem is in a black plastic enclosure, it came with a Z-bracket for mounting and is covered in the last section of this manual.



**Note///** DSX Modems are the only modems that are guaranteed to work with your DSX system. Other modems may or may not function properly with the WinDSX Software or Controllers. Please do not call DSX for modem assistance if you are not using DSX Modems.

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DSX Access Systems, Inc. 10731 Rockwall Road Dallas, Texas 75238  
800-346-5288 Accounting, Sales, Shipping and Technical Support  
214-553-6140 Phone      [www.dsxinc.com](http://www.dsxinc.com)

**This section of manual refers to the “Zoom” modem shown below.**



## Modem Operation Overview

The DSX System can communicate with multiple remote locations via dial-up phone modems. A baud rate of 9600 is required for DSX Intelligent Controllers. Each location may be treated as a separate system, or locations may be grouped together to form a larger access control system. Since the system is fully distributed and does not require a PC for operation, there is no loss of performance in systems using dial-up phone modems. All controllers retain all capabilities including card access, anti-passback, and Linking Logic.

The PC may be programmed to routinely poll each modem-controlled remote location from 10 to 65,534 minutes. Poll Times set lower than 10 minutes can affect the performance of the system. Routine Polls provide verification that communications are still functioning and the collection of history logs. If the PC fails to connect with a modem location on three consecutive attempts, a Location Communications Loss alarm is generated at the PC and an optional action message can be displayed instructing the operator on what action to take.

If the PC is not programmed to routinely poll the location Master, the Master controller can be programmed to automatically store all transactions until the history buffer reaches 80% of capacity. When the buffer is at 80%, the Master controller calls the PC to upload all transactions.

If an alarm event occurs, the Master will initiate a call to the PC to report the alarm event regardless of its buffer status. If the Master controller is reset for any reason, it will automatically call the PC and request a full parameter download to ensure proper operation.

When database changes occur, the system will initiate a call to the remote site at the earliest time possible when the modem and phone line are available. The System can be programmed to delay downloads for a programmable number of minutes or set for after hours downloading which defers downloads until the first convenient time between the hours of 1:00 and 5:00 AM.

## **Modem Recommendation**

DSX recommends the DSX series modems for dial up phone line communications. This series of modems are small dial up phone modems that may be powered from a supplied transformer or from the DSX equipment. By powering the PANEL modem from the equipment, the modem is battery backed up so that communications will occur even during an AC power loss.

DSX configures and initializes all modems before shipping. They are shipped with everything necessary for installation. These are the only modems DSX will support. Other modems may or may not work properly.

## **Phone Call Description**

During an incoming call at the PC, the PC modem will turn on the RING led to indicate that the line is ringing. The PC then commands the modem to go off-hook. The two modems form a link by transmitting a carrier tone through the phone line. At this time, the modem will turn on the DCD led. Communication will then proceed between the Master and the PC at the baud rate of 9600. The PC is always responsible for dropping the connection (hanging up the phone). The Master's modem hangs up when the connection is dropped.

The PC modem must be initialized before it will function properly. Each time the communications program is started, and before each outbound call, the modem is automatically initialized. If the modem loses power, or is turned off and then back on, it must be re-initialized. To manually re-initialize the modem, perform a manual connect and disconnect or exit the DSX software and return.

## **Communication Security Password (Location Password)**

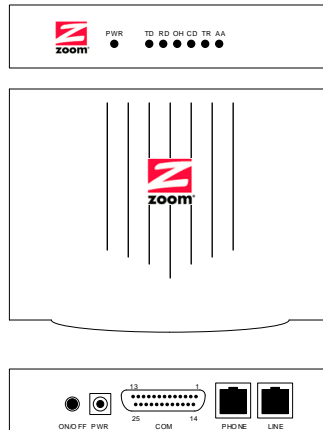
DSX downloads the Communication Security Password (Location Password) into the non-volatile memory of the Master Controller. Once the Master Controller is downloaded with the Location Password, the password is required for all dial-up modem communications to that location. The Location Password entry is located under Location in Database. In the DSX Software the Location Password is not downloaded into any panel that is not a modem connected Master.

Changing the password requires knowledge of the password and communication with the Master Controller using KB2CW.exe. This terminal emulation program will prompt the operator to enter the password and then allow the operator to change it by issuing the PW command. To change the password without exiting the DSX program requires completely resetting the controller by powering the controller down and up.

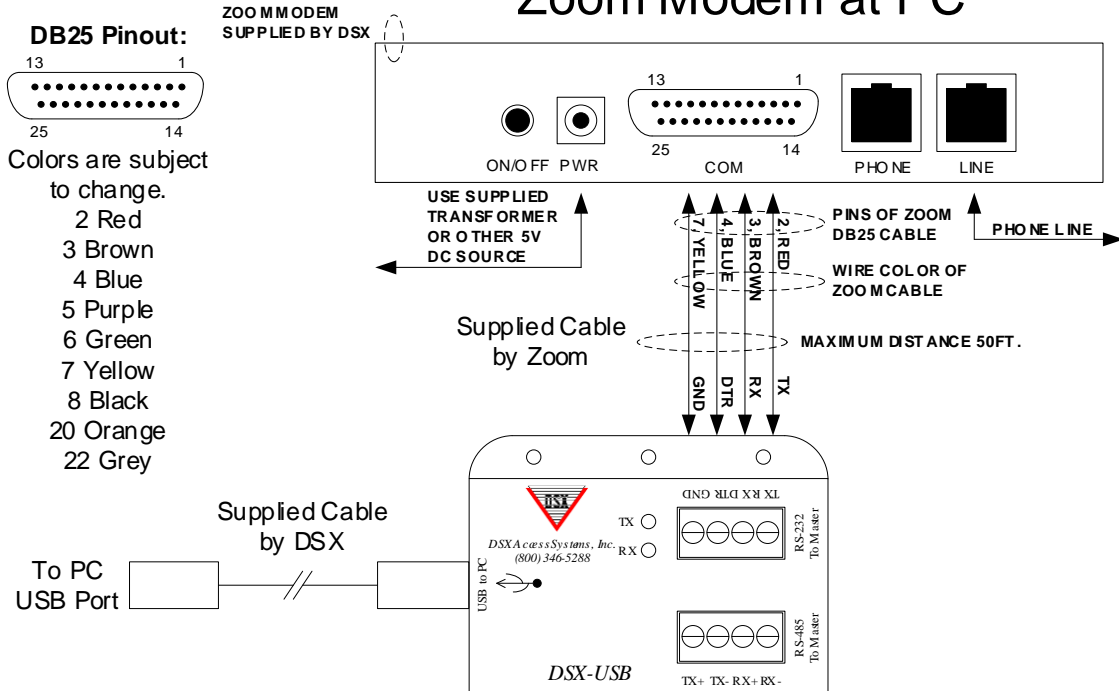
# Connections at Comm Server PC

## Comm Server

When this modem is used at the Comm Server it is powered from its plug-in power supply and connected to a DB9 Serial Port with the supplied cable. If a DB9 serial port is not available, the DSX-USB can be used to connect the modem to the PC. Cut the cable and wire it to the DSX-USB as shown below.



## Zoom Modem at PC



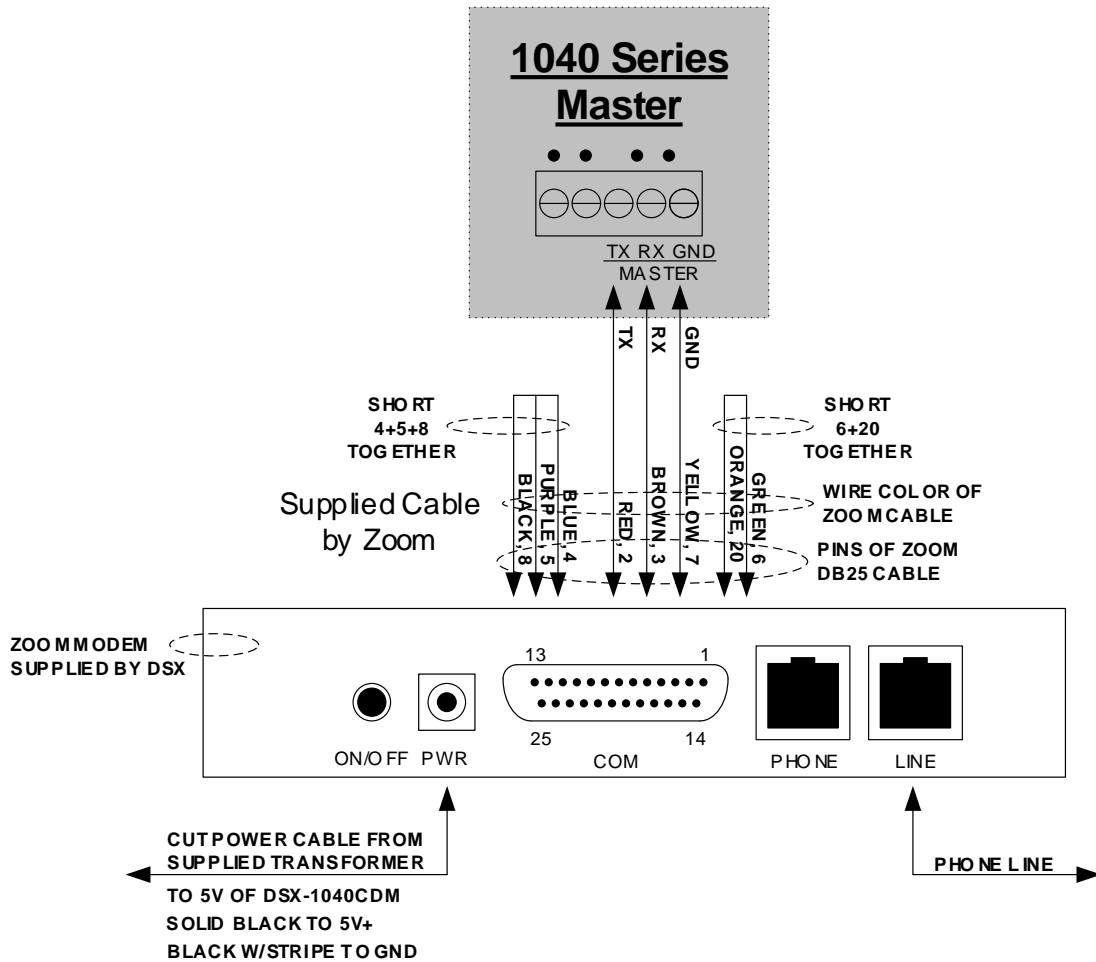


## Connections at DSX-1042

### DSX-1042 Controller

When this modem is used at a 1042 Master Controller use supplied cable and power connector to connect the modem to the master panel. Cut serial and power cables and wire them to the controller as shown below.

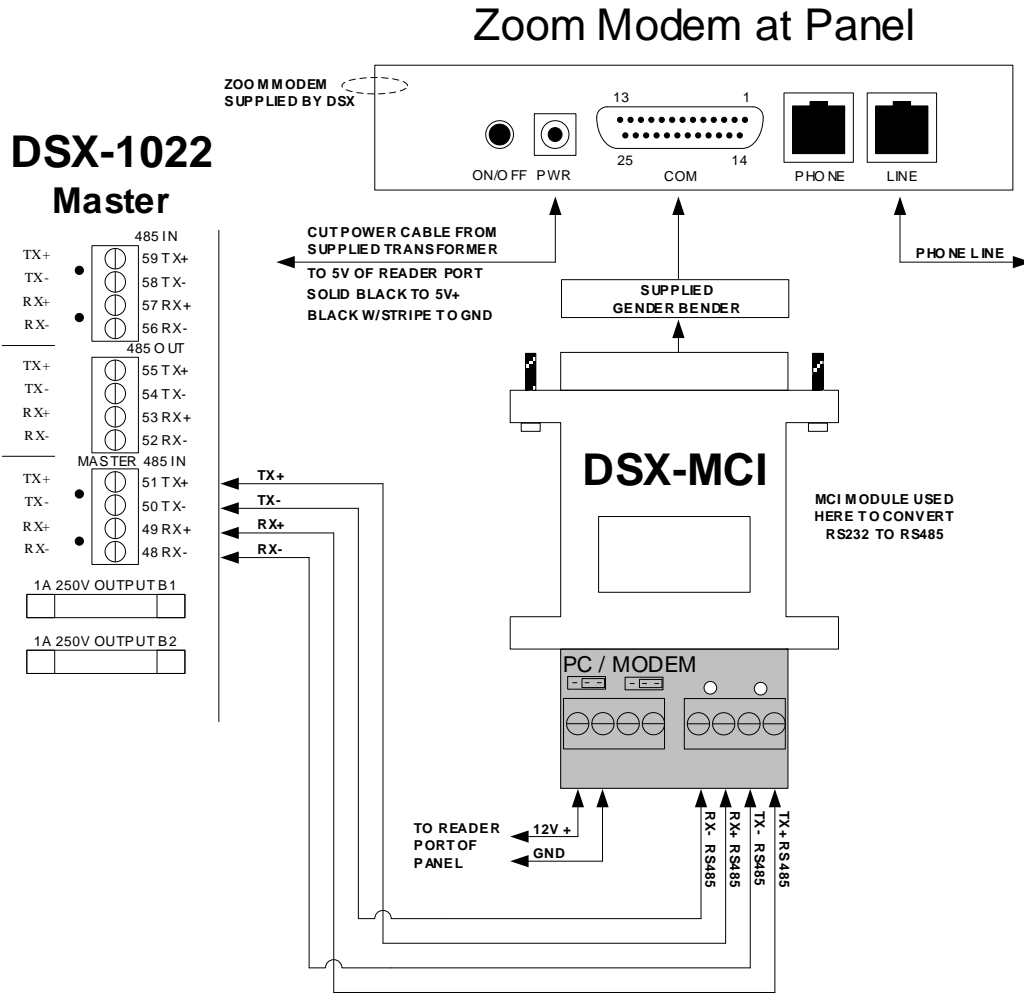
## Zoom Modem at Panel



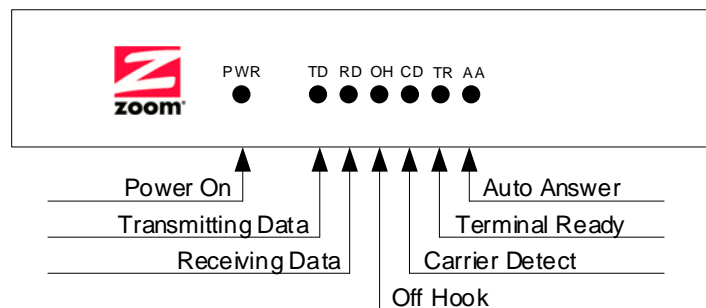
## Connections at DSX-1022

### DSX-1022 Controller

When this modem is used at a 1022 Master Controller use the DSX-MCI and Gender Bender to connect the modem to the master panel.



### DSX Modem LED Operation



## **PC Baud Rate**

At the Host or Comm Server PC, set the communications port baud rate to 9600.

## **Modem Power Sources**

The DSX- Modem will accept DC power from either the supplied transformer or from the DSX-1040-CDM 5VDC source or the 5VDC Reader Port of a DSX-1022 Intelligent Controller. The DSX-Modem requires 5VDC and a minimum of 250ma. Using the panel for modem power will provide backup power in the event of a loss of building power. When the DSX-Modem is placed at the PC use the supplied transformer.

## **Telephone Line Connections**

Connect the Dedicated Telephone Line from the RJ-11 termination jack into the connector labeled Line. Do Not share the telephone line with any other equipment such as FAX machines or Elevator Phones. Observe proper phone line polarity. Phone Line - Tip/Green is Positive 48-52VDC. Red/Ring is Negative 48-52VDC.

## **Modem to DSX-1040 and DSX-1022 Connections**

The DSX-Modem provides RS-232 terminations to allow a connection from the Master Controller to the modem.

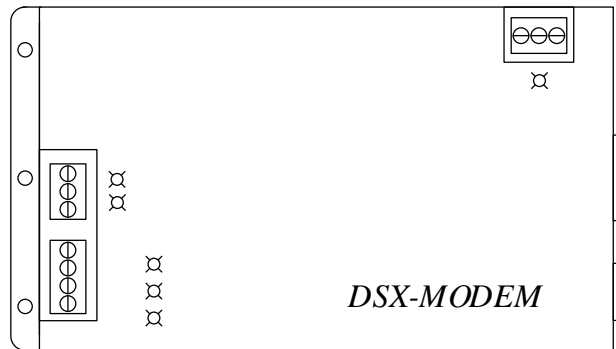
If used at a DSX-1040 Master Panel, the Master Port wires (TX, RX and GND) connect to pins 2, 3 and 5 respectfully of the Modem DB25, also short pins 4, 5 & 8 together plus 6 and 20 shorted together.

If used at a DSX-1022 Master Panel a DSX-MCI and the supplied DB25 gender bender will be required to convert the RS-232 output of the Modem DB25 to RS-485 PC to Master connection. Ensure the RS-485 wires cross: TX+ to RX+, TX- to RX-, RX+ to TX+ and RX- to TX-. Also move the 2ea. jumpers on the DSX-MCI to the Modem side.

## **Mounting Modem in DSX Enclosures**

When the DSX-Modem is used with a DSX-1040 or DSX-1022 enclosure it can be set inside of the enclosure.

**This section of manual refers to the “metal” modem shown below.**



## Modem Operation Overview

The DSX System can communicate with multiple remote locations via dial-up phone modems. A baud rate of 9600 is required for DSX Intelligent Controllers. Each location may be treated as a separate system, or locations may be grouped together to form a larger access control system. Since the system is fully distributed and does not require a PC for operation, there is no loss of performance in systems using dial-up phone modems. All controllers retain all capabilities including card access, anti-passback, and Linking Logic.

The PC may be programmed to routinely poll each modem-controlled remote location from 10 to 65,534 minutes. Poll Times set lower than 10 minutes can affect the performance of the system. Routine Polls provide verification that communications are still functioning and the collection of history logs. If the PC fails to connect with a modem location on three consecutive attempts, a Location Communications Loss alarm is generated at the PC and an optional action message can be displayed instructing the operator on what action to take.

If the PC is not programmed to routinely poll the location Master, the Master controller can be programmed to automatically store all transactions until the history buffer reaches 80% of capacity. When the buffer is at 80%, the Master controller calls the PC to upload all transactions.

If an alarm event occurs, the Master will initiate a call to the PC to report the alarm event regardless of its buffer status. If the Master controller is reset for any reason, it will automatically call the PC and request a full parameter download to ensure proper operation.

When database changes occur, the system will initiate a call to the remote site at the earliest time possible when the modem and phone line are available. The System can be programmed to delay downloads for a programmable number of minutes or set for afterhours downloading which defers downloads until the first convenient time between the hours of 1:00 and 5:00 AM.

## **Modem Recommendation**

DSX recommends the DSX series modems for dial up phone line communications. This series of modems are small dial up phone modems that may be powered from the 12VDC Reader Port 12V output of the DSX Controller. By powering the modem from the controller, the modem is battery backed up so that communications will occur even during an AC power loss.

DSX configures and initializes all modems before shipping. They are shipped with everything necessary for installation. These are the only modems DSX will support. Other modems may or may not work properly.

## **Phone Call Description**

During an incoming call at the PC, the PC modem will turn on the RING led to indicate that the line is ringing. The PC then commands the modem to go off-hook. The two modems form a link by transmitting a carrier tone through the phone line. At this time, the modem will turn on the DCD led. Communication will then proceed between the Master and the PC at the baud rate of 9600. The PC is always responsible for dropping the connection (hanging up the phone). The Master's modem hangs up when the connection is dropped.

The PC modem must be initialized before it will function properly. Each time the communications program is started, and before each outbound call, the modem is automatically initialized. If the modem loses power, or is turned off and then back on, it must be re-initialized. To manually re-initialize the modem, perform a manual connect and disconnect or exit the DSX software and return.

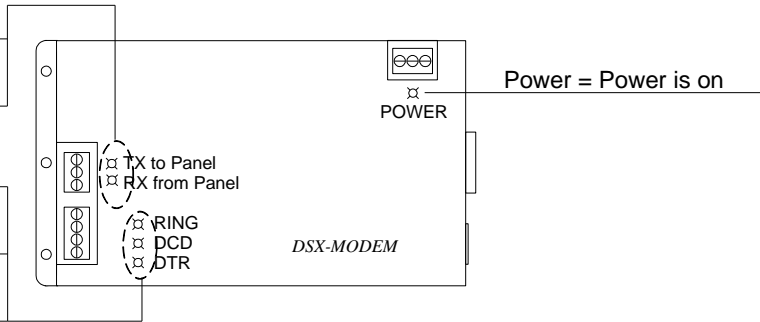
## **Communication Security Password (Location Password)**

DSX downloads the Communication Security Password (Location Password) into the non-volatile memory of the Master Controller. Once the Master Controller is downloaded with the Location Password, the password is required for all dial-up modem communications to that location. The Location Password entry is located under Location in Database. In the DSX Software the Location Password is not downloaded into any panel that is not a modem connected Master.

Changing the password requires knowledge of the password and communication with the Master Controller using KB2CW.exe. This terminal emulation program will prompt the operator to enter the password and then allow the operator to change it by issuing the PW command. To change the password without exiting the DSX program requires completely resetting the controller by powering the controller down and up.

## DSX Modem LED Operation

- TX = Normally off and turns On to indicate the Modem is sending data.
- RX = Normally off and turns On to indicate the Modem is receiving data.
- RING = Normally off and turns On to indicate the Modem is being called.
- DCD = Normally off and turns On to indicate connection established.
- DTR = Terminal (modem) ready.



## PC Baud Rate

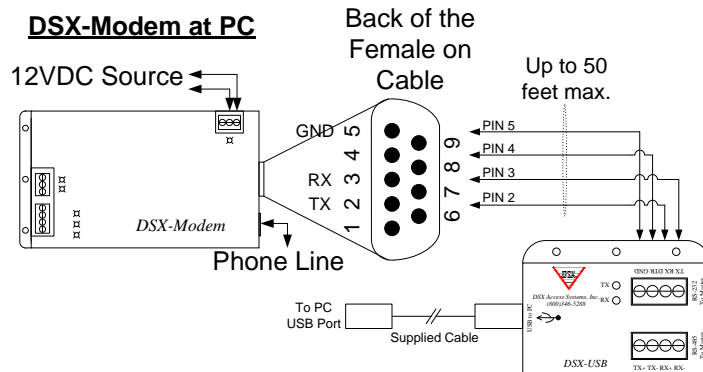
At the Host or Comm Server PC, set the communications port baud rate to 9600.

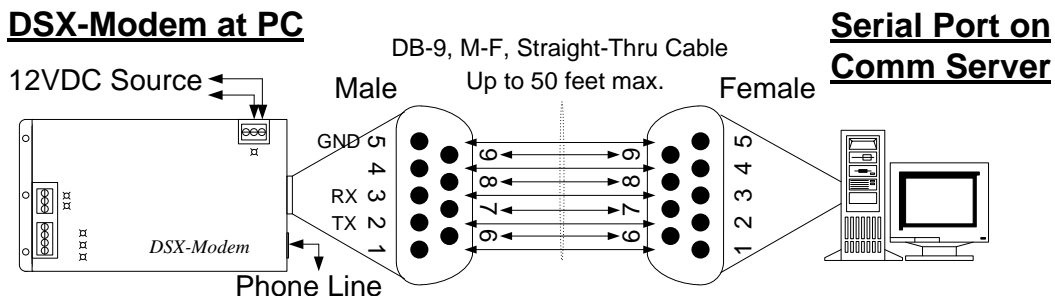
## Modem Power Sources

The DSX- Modem will accept DC power from either the supplied transformer or from the DSX-1040-CDM 12VDC source or the 12VDC Reader Port of a DSX-1022 Intelligent Controller. The DSX-Modem requires 12VDC and a minimum of 250ma. Using the panel for modem power will provide backup power in the event of a loss of building power. When the DSX-Modem is placed at the PC use the supplied transformer.

**NOTE**/// The striped wire represents DC+ voltage.

## Modem to PC Connections





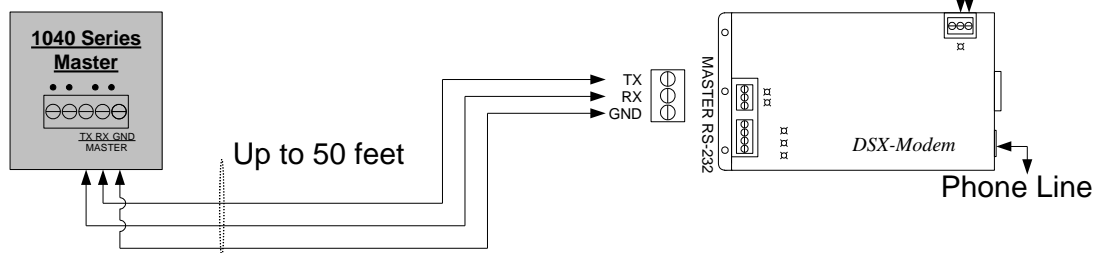
### Telephone Line Connections

Connect the Dedicated Telephone Line from the RJ-11 termination jack into the connector labeled Line. Do Not share the telephone line with any other equipment such as FAX machines or Elevator Phones. Observe proper phone line polarity. Phone Line - Tip/Green is Positive 48-52VDC. Red/Ring is Negative 48-52VDC.

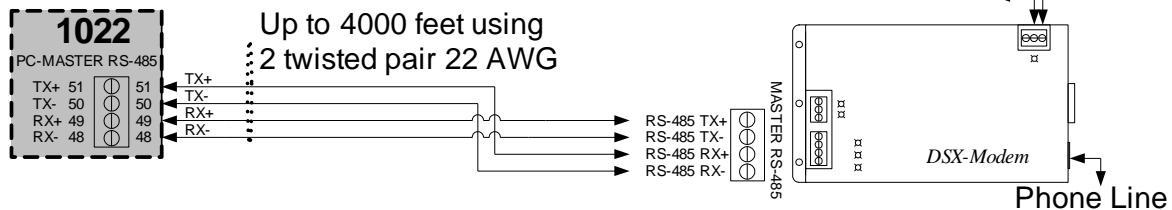
### Modem to DSX-1040 and 1022 Connections

The DSX-Modem provides RS-232 and RS-485 terminations to allow a connection from the Master Controller to the modem.

#### PC to Master RS-232 Terminals of DSX-1040 Master Controller



#### PC to Master RS-485 Terminals of DSX-1022 Master Controller

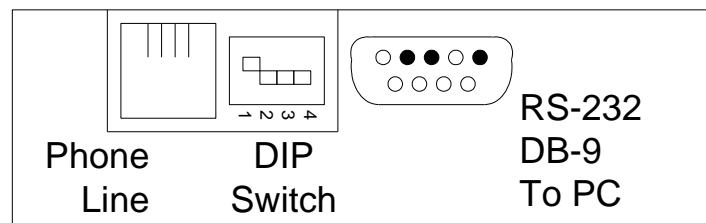


## Mounting Modem in DSX Enclosures

When the DSX-Modem is used with a DSX-1040 enclosure it can be mounted on the mounting stud on the door. Loosen the nut with an 11/32" nut driver and place the modem on the stud and tighten the nut. Another mounting option includes setting the modem in the bottom of the DSX-1040 or DSX-1022 enclosure.

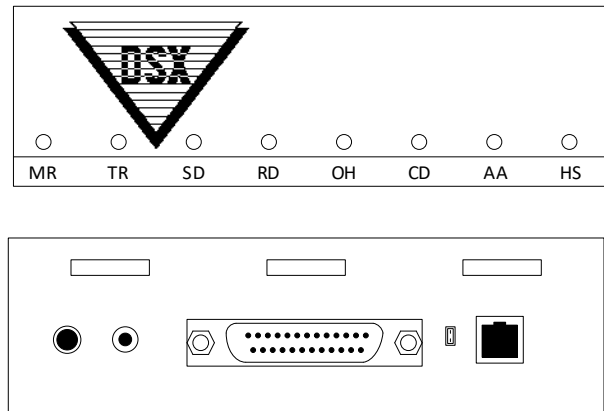
## DSX-Modem Dip Switches

The dip switches control Modem Location and Speaker Mode. Located on the right side of the modem is a set of 4 switches. The switch 1 up disables the speaker; switch 1 down enables the speaker. If the DSX-Modem is located at the PC, the 3 switches to the right (2-4) should be up. If the DSX-Modem is located at the Panel the 3 switches to the right (2-4) should be down.





**This section of manual refers to the “plastic” modem shown below.**



## Modem Operation Overview

The DSX System can communicate with multiple remote locations via dial-up phone modems. A baud rate of 9600 is required for DSX Intelligent Controllers. Each location may be treated as a separate system, or locations may be grouped together to form a larger access control system. Since the system is fully distributed and does not require a PC for operation, there is no loss of performance in systems using dial-up phone modems. All controllers retain all capabilities including card access, anti-passback, and I/O Linking.

The PC may be programmed to routinely poll each modem-controlled remote location from 10 to 65,534 minutes. Poll Times set lower than 10 minutes can affect the performance of the system. Routine Polls provide verification that communications are still functioning and the collection of history logs. If the PC fails to connect with a modem location on three consecutive attempts, a Location Communications Loss alarm is generated at the PC and an optional action message can be displayed instructing the operator on what action to take.

If the PC is not programmed to routinely poll the location Master, the Master controller can be programmed to automatically store all transactions until the history buffer reaches 80% of capacity. When the buffer is at 80%, the Master controller calls the PC to upload all transactions.

If an alarm event occurs, the Master will initiate a call to the PC to report the alarm event regardless of its buffer status. If the Master controller is reset for any reason, it will automatically call the PC and request a full parameter download to ensure proper operation.

When database changes occur, the system will initiate a call to the remote site at the earliest time possible when the modem and phone line are available. The System can be programmed to delay downloads for a programmable number of minutes or set for afterhours downloading which defers the downloads until the first convenient time between the hours of 1:00 and 5:00 AM.

## **Modem Recommendation**

DSX recommends the DSX series modems for dial up phone line or leased line communications. This series of modems are small dial up phone modems that may be powered from the 12VDC Reader Port 12V output of the DSX Controller. By powering the modem from the controller, the modem is battery backed up so that communications will occur even during an AC power loss.

DSX configures and initializes all modems before shipping. They are shipped with everything necessary for installation. These are the only modems DSX will support. Other modems may or may not work properly.

## **Phone Call Description**

During an incoming call at the PC, the modem transmits a ring signal to indicate that the line is ringing. The PC then commands the modem to go Off-Hook (OH). The two modems form a link by transmitting a carrier tone through the phone line. At this time, the modem will turn on the Carrier Detect (CD) light. Communication will then proceed between the Master and the PC at the defined baud rate. The PC is always responsible for dropping the connection (hanging up the phone). The Master's modem hangs up when the connection is dropped.

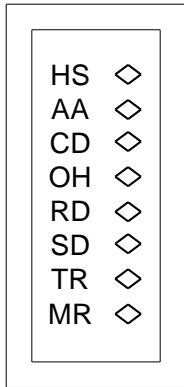
The PC modem must be initialized before it will function properly. Each time the communications program is started, and before each outbound call, the modem is automatically initialized. If the modem loses power, or is turned off and then back on, it must be re-initialized. To manually re-initialize the modem, perform a manual connect and disconnect or exit the communications program and return.

## **Communication Security Password (Location Password)**

WinDSX downloads the Communication Security Password (Location Password) into the non-volatile memory of the Master Controller. Once the Master Controller is downloaded with the Location Password, the password is required for all dial-up modem communications to that location. The Location Password entry is located under Location in Database. In the WinDSX Software the Location Password is not downloaded into Direct Connected Masters.

Changing the password requires knowledge of the password and communication with the Master Controller using KB2CW.exe. This terminal emulation program will prompt the operator to enter the password and then allow the operator to change it by issuing the PW command. To change the password without exiting the DSX program requires completely resetting the controller by powering the controller down and up.

## DSX Modem LED Operation



- HS** Always On when initialized at 4800 baud or higher.
- AA** On at PC when call is ringing in. Stays On at Controller once Controller has initialized. Modem to answer on third ring.
- CD** On during communication session.
- OH** Normally Off and turns On when the modem goes off hook.
- RD** Normally Off and flashes On to indicate the PC is receiving from the modem.
- SD** Normally Off and flashes On to indicate the PC is sending data to the modem.
- TR** Always On and flashes at PC before connecting and disconnecting.
- MR** Always On at PC and at DSX Controller when modem has power.

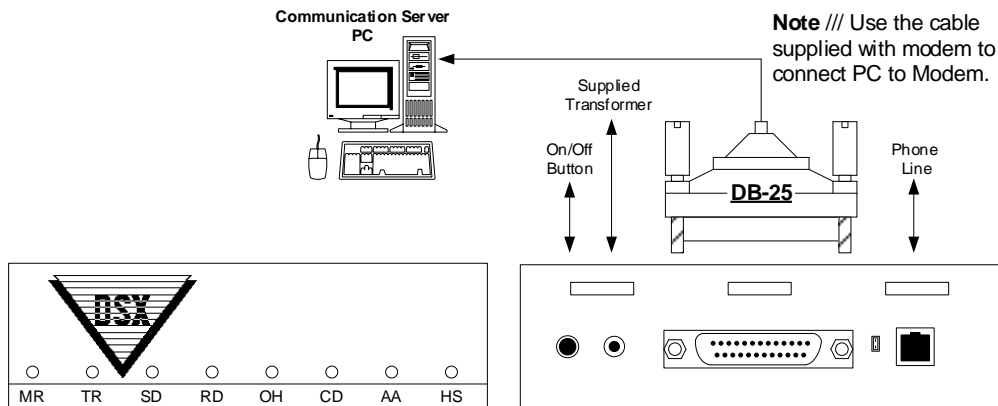
## Modem to PC Connections

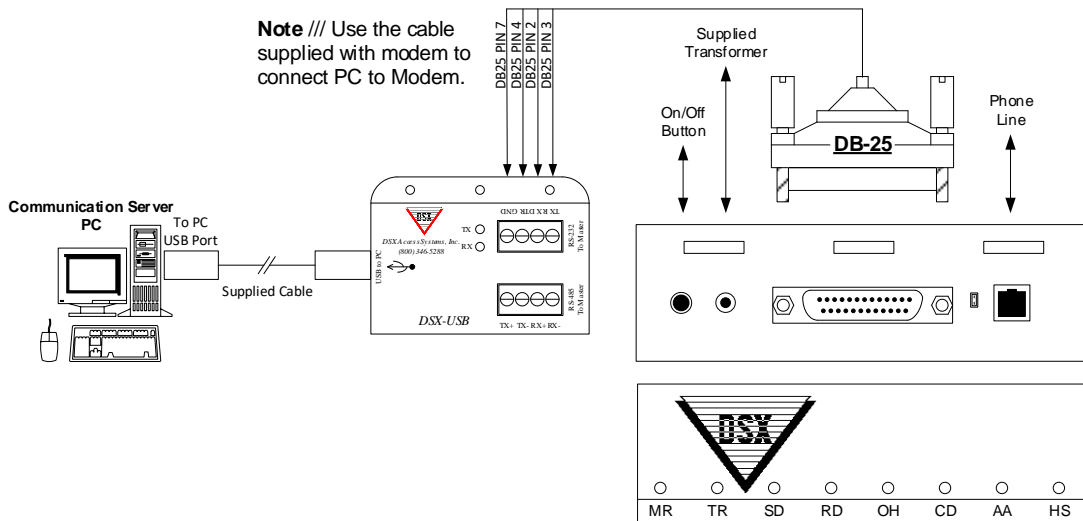
### DSX Modem to PC Comm Port

Use supplied modem cable to connect the modem to Comm port on the PC.

### DSX Modem Power Connections at PC

Use the supplied DC power adapter to power the modem when used at the PC. Connect the DC power adapter to the same AC power source as the PC.





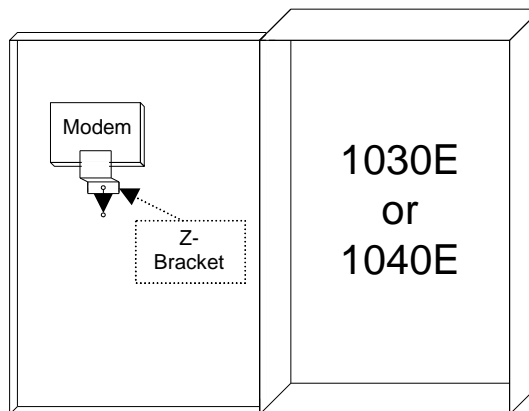
## PC Baud Rate

At the Host or Comm Server PC, set the communications port baud rate to match the baud rate set in the Master Controller, which is typically 9600 baud.

## Modem Mounting in DSX Enclosures

When the DSX Modem is used with a DSX-1032, DSX-1033, DSX-1034 or DSX-1040 Controller it can be mounted in the enclosure using the supplied Z-bracket. The Z-bracket is installed over the top left mounting stud on the door of the enclosure. Loosen the nut with an 11/32" nut driver and slide the keyhole slot of the Z-bracket over the loosened nut and stud and tighten the nut. The bracket when installed properly forms a pocket between it and the door of the enclosure and holds the modem securely. Slide the modem between the bracket and the enclosure door so that the LEDs on the front of the modem are facing to the left and the connections on the back to the right. Once the modem is in place tighten the top left mounting nut.

Mounting the modem in other DSX Controllers may not allow the Z-Bracket to be used. The modem will set in the bottom of a DSX-1020, DSX-1021 or DSX-1022 Controller.



Modem in DSX-1030 or 1040 Enclosure

## Modem Power at Controller

The DSX modem will accept AC or DC power. Power the modem from the I/O board 12V Reader power output when used at a controller. By powering the modem from the controller, you should have backup power from the battery. When the modem is placed at the PC use the supplied plug-in power adapter.

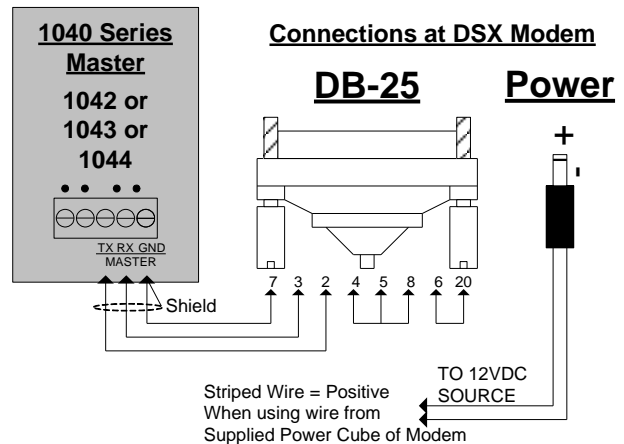
## Modem to DSX-1042, 1043 and 1044 Connections

### Master Controller Communications Port

The DSX-1040, 1032, 1033 and 1034 controllers use the RS-232 port on the Master communications terminal block at the bottom of the I/O board to connect a dial-up phone modem to the controller.

### Modem Power

The DSX-1040s, 1030s, and 1020s include 12VDC power outputs compatible with the DSX dial-up phone modems. Meter the power wire to determine the positive and negative side. (The tip of the power plug is positive, and the base is negative.) If power is reversed to the modem, damage will occur.



### Data Connections

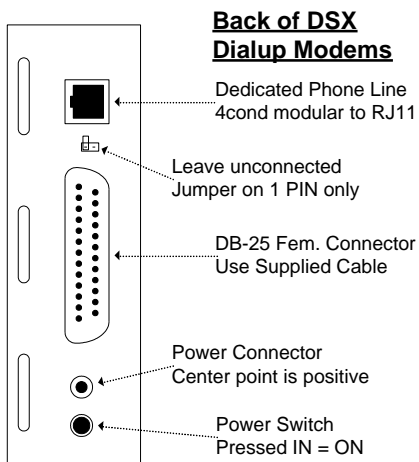
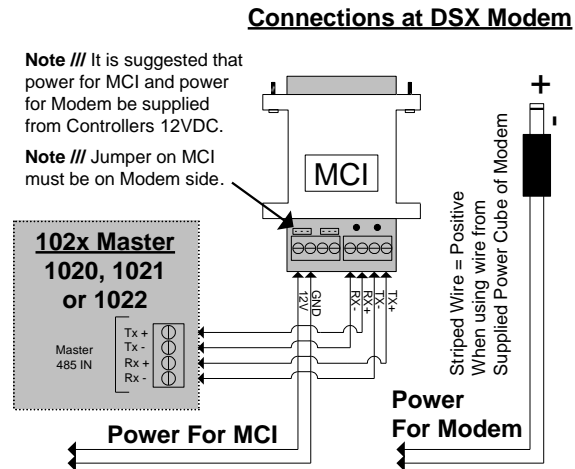
To connect the modem to the controller, cut the male DB-25 connector from the supplied modem cable and connect it to the controller using the diagram above and secure the 25-pin connector to the modem.

## Modem to DSX-1022, 1021/1020 via MCI

Connect the MCI Module to the 1022, 1021/1020 as shown on the Diagram below, connect the DB25 female connector on the MCI to the supplied DB25 female to male Gender Changer, connect the other end of the Gender Changer to the Dial-Up Phone Modem. The power connections are made with the wire and connector cut from the supplied DC adapter.

## Telephone Line Connections

Connect the Dedicated Telephone Line from the RJ11 termination jack into the connector labeled Line. Do Not share the telephone line with any other equipment such as FAX machines or Elevator Phones. Observe proper phone line polarity. Tip/Green is Positive 48-52 VDC. Red/Ring is Negative 48-52DC.



## Initial Modem Communications Procedure

Follow these steps when establishing modem communications to a dial-up location for the first time.

**Note** /// A Terminal Emulation Program is installed during each installation of WinDSX software. In current WinDSX it is known as KB2CW.exe.

A: To Configure the Master Controller with the PC's Phone Number while in the Field:

1. Confirm that all connections for the modem at the Master Controller and the modem at the PC are made according to the instructions in the Manual. The Modem at the controller should get its power from the 12 VDC card reader terminals.
2. Power the Master Controller up and wait. After initial power up the Master Controller will force the modem off-hook and will attempt to dial out.
3. After the dialing attempt, which fails because the controller does not yet know the PC's correct phone number, unplug the Host terminal block that connects the modem to the Master Controller. This should be done at the DSX Controller and not at the Modem. Now the Modem is ready to receive a call from the PC.
4. Once the Modem at the DSX Master Controller answers, plug the Host Port terminal back into the DSX Controller. This will allow the DSX Controller to receive the download.

B: To Pre-configure the PC's Phone Number into the Master Controller's non-volatile memory:

1. To have the Master Controller automatically dial out upon initial power up at the job site, the PC's phone number must be entered into the Master Controller ahead of time. The Master Controller can be connected directly to a PC or Laptop at the office or in the field and with the use of KB2CW.EXE a phone number can be programmed into non-volatile memory. The Controller, upon power up will automatically call the PC using the stored phone number and request a parameter download.
2. Start KB2CW.EXE, go to "Comm Port", "Define Port", Enter the Port number that is being used to connect the DSX Controller to the PC or Laptop, and then click "OK".
3. Press the "Enter" key 4-5 times, a DSX prompt (DSX>) should appear on the screen. At the DSX prompt type in "SP" and press "Enter". The PC phone number (up to 16 digits) can now be programmed into the non-volatile memory.
4. For more instructions on the KB2CW.EXE program and what can be changed by this program, see the KB2CW.EXE section in the DSX Hardware Installation Manual.

## **Modem Compatibility**

DSX Modems are the only modems that are guaranteed to work with your DSX system. Other modems may or may not function properly with the DSX Software or Controllers. Please do not call DSX for modem assistance if you are not using DSX Modems!

## **Existing Modems**

DSX has supplied modems for many years to use with DSX Intelligent Controllers. These modems have conformed to one of three visual characteristics. One of the oldest designs was in a black plastic housing DSX also provided a modem in a black metal housing The most current modem supplied by DSX is produced by Zoom.

This manual is a combination of all three models provided by DSX over the years.

**Note** /// If these modems do not operate consistently or in a stable manner they must be replaced.

## **Changing the Modem Initialization String for the PC**

If using WinDSX change the modem init string in the Comm Port definitions under System/Setup in the DataBase program.

## **Modem Speaker Volume - PC**

To disable the modem speaker, substitute M0 for M1 in the MIS string. To increase the volume of the speaker, add L2 to the MIS string after the M1 command. 0=Zero

## **Resetting the Modem - PC**

When making the above changes it may be necessary to reset the modem before the changes will work properly. To do this, use KB2CW.exe from the WinDSX directory and connect the modem to the PC's serial port. Run the KB2CW.exe program by double clicking on it through Windows File Explorer. Select Comm Port from the menu. Enter the appropriate port number and baud rate (9600, 8, 1, N) and click OK. Next type AT&F and press Enter. The modem should respond "OK". It may take several attempts at resetting the modem for it to respond "OK".



## **Modifying the Controllers Communication Parameters**

### **KB2CW.exe Terminal Emulation**

There are several parameters that can be changed and set in the non-volatile memory of the controller. These parameters can be viewed and changed without the use of the software. The communications speed is pre-set to 9600 baud and cannot be changed. The Location number can be changed to a number higher than the dipswitch will allow. The PC's phone number and the modem initialization string can also be viewed and changed. The Location Password can also be changed in this terminal mode of operation.

To view or change data stored in the controller, use a dumb terminal or a PC running a terminal emulation program such as KB2CW.exe. This is accomplished by connecting the serial port of the Master Controller to the serial port on a laptop or PC. Use the terminal emulation program that accompanies the WinDSX software. This terminal emulation program is called KB2CW.exe and is in the WinDSX directory. KB2CW.exe does not need the WinDSX software to operate and can be copied to a laptop or PC not containing the software.

The following will show the steps required to view and change some of the controller settings using a PC running the terminal emulation program KB2CW.exe on Comm Port

### **To Run KB2CW.exe**

1. Make the necessary connections from the PC to the Master as a direct connect system. Also verify that the mode dip switch(es) on the Master is set with 8 On (Master Direct Connect).
2. Using Windows File Explorer find the WinDSX directory and locate the KB2CW.exe file and double click on it.

Select Comm Port from the menu at the top and set the port number to match the port used. Then set the Baud Rate to 9600, Word to 8, Stop Bits 1, and Parity to None.

The program should return a message that displays the port, baud, data length, stop bit setting and show a single line flashing cursor. If you receive a message that says: "Port Could Not Be Initialized", there is a hardware problem with the PC or the Communications Server application (CS.exe) is still running, keeping the port reserved for CS and must be corrected.

3. Press the Enter key three times. You should then see a DSX> prompt returned from the Master Controller.
4. Once you have the DSX> prompt, type "?" and then press (Enter). This will show the command list from the Master Controller. The controller will return the following list of valid commands:

## To Display the List of Valid Commands

Type: "?" and press Enter. (DSX> ?) The following information is displayed:

```
DSX> ?
```

```
Valid Commands:
?      Command List
V      Version & Misc
CR     Card Reader
TD     Table Dump
RR     Record Dump
LO     Enter Location
MD     Memory Dump
RE     Reset modem defaults
MI     Enter Modem Init Seq
SP     Set Host Phone
EM     Enter Mode
DI     Dump Inputs
PW     Enter Password
BU     Set Busy Flag
SS     Sub Status & object sizes
ST     Stats
NV     Perform NVRAM check
TZ     TZ Status
AZ     Active TZs
NT     Network Test
```

```
DSX>
```

Many of the commands above are used in development.

The common commands used include:

V to show the firmware version of the connected controller and miscellaneous information.

CR to show the raw data received my Master Controller Card Reader Ports.

LO to set Location number to 128 and up.

SP to program phone number of Host PC.

MI to change the Modem Initialization string at the Master Controller.

PW to change the Location Password at the Master Controller.

## To Display Version and Miscellaneous Information

Type: "V" and press Enter. (DSX> V) The following information is displayed:

DSX> V

```
Version          3209
Built            12/11/2013 [19:37:0]
Current Time     11/15/2021 [7:59:35]
Master/Sub Adr   Master = 1  Switches = 10000001
Phone
Modem/Lan Baud   Modem_baud_rate = 9600  Panel_baud_rate = 9600
Modem Default    +++~AT|ATZ|~~~ATM1Q1E0S0=3&D0&K0\N0|~ATDT%
Modem Current    +++~AT|ATZ|~~~ATM1Q1E0S0=3&D0&K0\N0|~ATDT%
Stack            Stack size = 8704(2200x)  PreVstack = 4916(1334x)
Missed Polls     Missed Polls Today = 96  Missed Polls Yesterday = 0
Hardware         CPU_Type = 1  IO_Board_ID = 1042  Ram_K_Bytes = 512
Readers          Reader_A_device_type = 88  Reader_B_device_type = 2
Download         Last_Download_Seconds = 97  Max_Download_Seconds = 97
Rebroadcast Q    RBCQ = 0  RBCQ_Num_Recs = 74  RBCQ_Max_Recs = 1
Errors           Table_Checksum_Errors = 0  Event_errors = 0
Busy Flags       --
Misc             Total_Seconds = 402  SuperLoop_Cycles_Per_Second = 1303
Memory           Table_Bytes = 478991  Heap_Bytes = 0
Checksums        Rcvd_Checksum = 0  Calc_Checksum = 37314298
Addresses        Sub_Nodes_Address = 21729(54E1x)  Nodes_Address
```

Address	Table	Records_in_use	Records_avail
	Checksum_rcvd	Checksum_calc	Checksum_diff
0(Node)		128	128

The screen capture above is incomplete.

The most common use of V is to verify the Master/Sub Address.

The binary in the Master/Sub Adr line above represents switch # 8, 7, 6, 5, 4, 3, 2, 1.

## Changing the Modem Initialization String in the Master Controller

5. You may customize the modem initialization sequence sent by the Master. This may be necessary when modems, other than those recommended by DSX, are used in the system. To change the modem initialization sequence, from the DSX> prompt of KB2CW, type in MI and then press Enter. The Master Controller will return Enter Init Sequence: Type in the initialization sequence that you want to be sent to the modem and press Enter.
6. To view the stored modem initialization sequence, type V and then press Enter. The default init string is the initialization string stored in the firmware. The current init string is the one that is stored in non-volatile memory and is the one currently used.
7. Type MI to set the current modem init string as shown, when finished press (Enter).  
`+++~::~AT|ATZ|~::~ATM1Q1E0S0=3&D0&K0\N0|~ATDT%` If you make a mistake, you must start over by pressing (Enter) and then MI (Enter). When complete press (Enter) and type V (Enter) to check for the new "current" init string. (0 = Zero)
8. To quit press Escape. Reconnect the modem and power the controller down and back up.

## Restrict Dial-out - Controller

To restrict the modem connected to the DSX field controller from dialing out, remove the "ATDT%" from the controllers' modem initialization string outlined on the previous page.

## Modem Speaker Volume - Controller

To disable the modem speaker, substitute M0 for M1 in the MIS string. To increase the volume of the speaker, add L2 to the MIS string leaving M1 in the string.

## Resetting the Modem - Controller

When making the above changes it may be necessary to reset the modem before the changes will work properly. To do this, use KB2CW.exe from the WinDSX directory and connect the modem to the PC's serial port. Run the KB2CW.exe program by double clicking on it through Windows Explorer. Select Comm Port from the menu. Enter the appropriate port number and baud rate (9600, 8, 1, N) and click OK. Next type AT&F and press Enter. The modem should respond "OK". It may take several attempts at resetting the modem for it to respond "OK".

## Leased Line Modems

DSX Leased Line Modems are no longer available.

Leased line modems may be used with the DSX System between the PC and the Master or between the Master and Sub controllers. A leased line connection is essentially the same as “direct wire” as far as the system is concerned. There are no special programming considerations for leased line modems. When ordering a leased line for use with the DSX System, you should specify the following items:

- 2 or 4 wire circuit (depending on the modem you are using, 2 wire for DSX modems)
- Analog

The communications parameters used in all aspects of the DSX System that could be used with leased line modems are:

- 9600 Baud
- 8-bit word
- No parity
- 1 stop bit
- Asynchronous

There are many leased line modems that are compatible with these parameters. Be sure to select a modem that will automatically re-establish a connection if it is ever disconnected. This will prevent having to manually reconnect the modems every time there is a short break in service from the Phone Company.

**Note** /// It is important when using leased line modems or other equipment that these devices do not buffer, perform data compression, error checking, or alter the flow of data in any way.

## DSX Modems used for Lease Line Operation

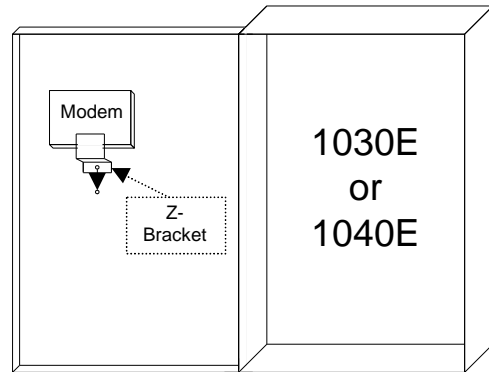
DSX Leased Line Modems are no longer available through DSX for two wire leased line connections or point to point communications. The modems automatically reconnect when reset. Follow the diagrams below to connect the DSX modems for two-wire leased line operation.

## Leased Line Modem Power Sources

The DSX-1040s, 1030s, and 1020s include 12VDC power outputs compatible with the DSX modems. Meter the power wire to determine the positive and negative side. (The tip of the power plug is positive, and the base is negative.) If power is reversed to the modem, damage will occur. When the modem is placed at the PC use the supplied plug-in power adapter.

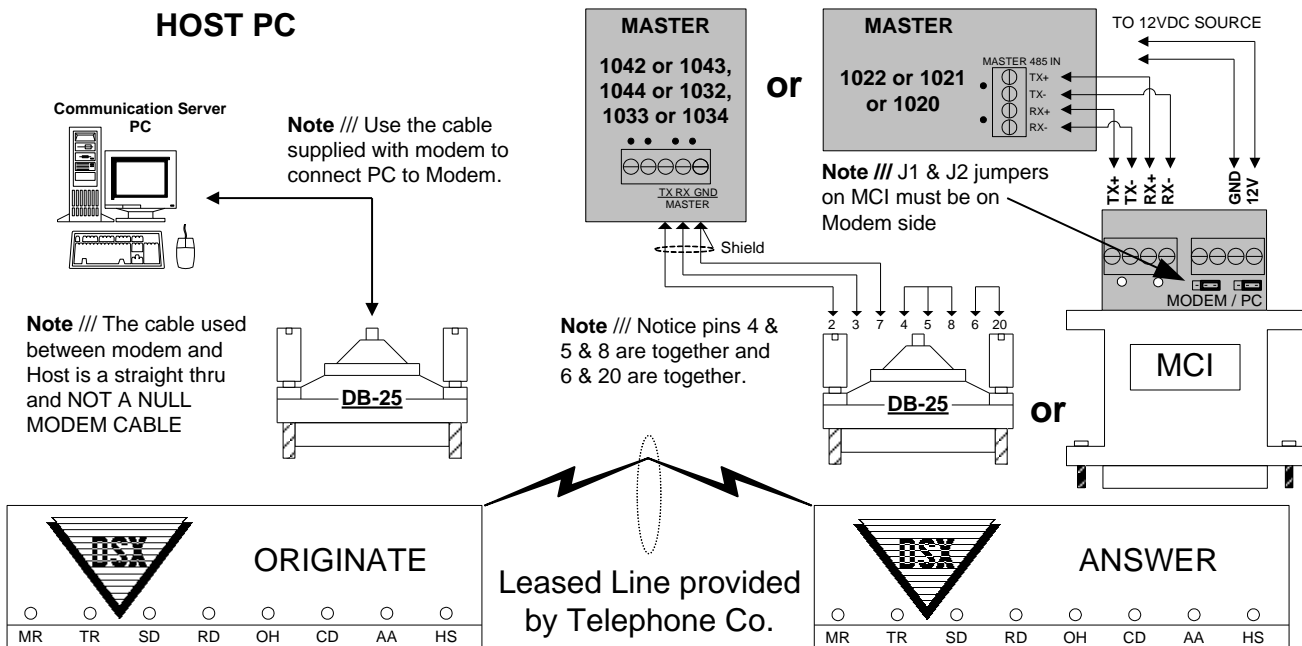
## Leased Line Modem Mounting in DSX Enclosures

When the DSX Modem is used with a DSX-1030 or DSX-1040 Controller it can be mounted in the enclosure using the supplied Z-bracket. The Z-bracket is installed over the top left mounting stud on the door of the enclosure. Loosen the nut with an 1 1/32" nut driver and slide the keyhole slot of the Z-bracket over the loosened nut and stud and tighten the nut.

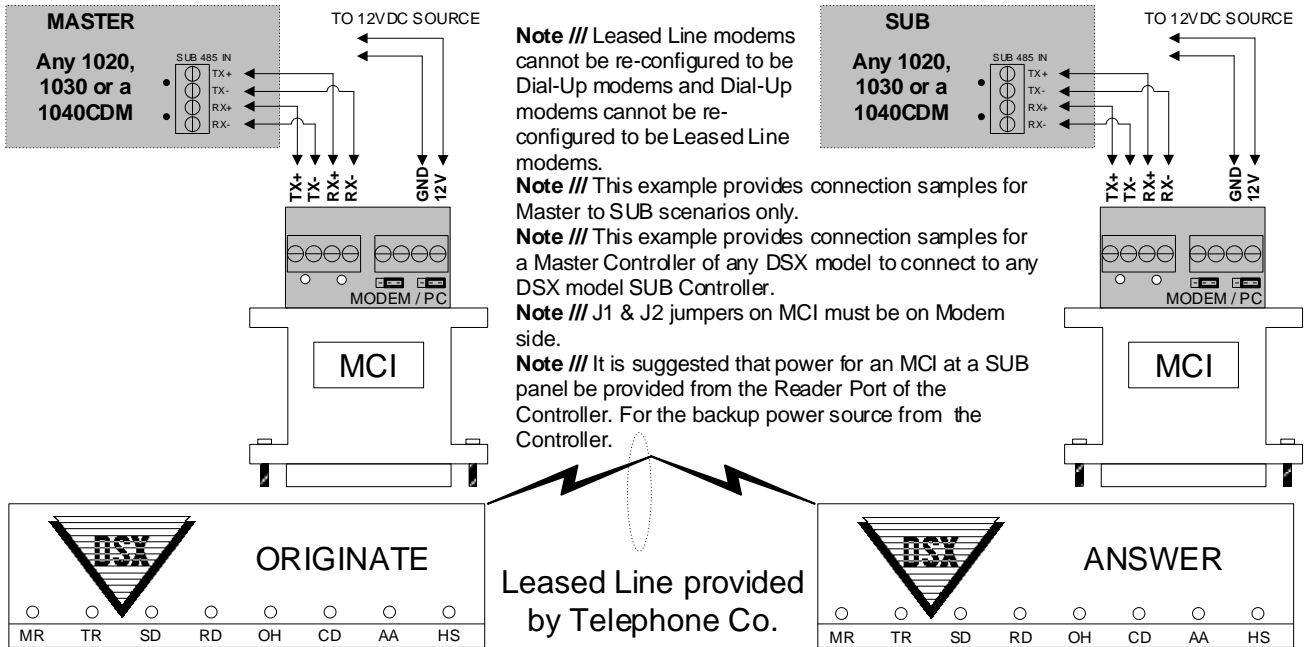


Modem in DSX-1030 or 1040 Enclosure

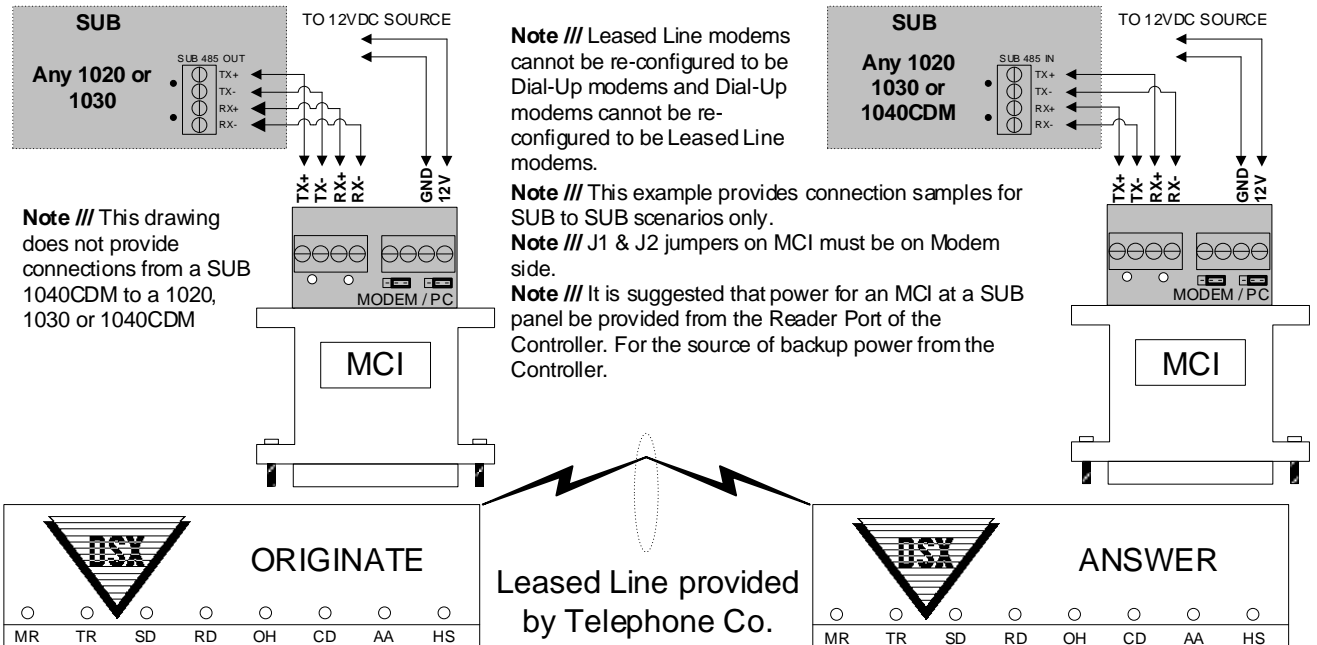
## Host to a Master Controller using DSX Leased Line Modems



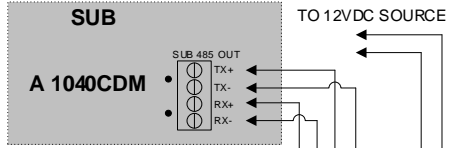
## Master to a Sub Controller using DSX Leased Line Modems



## Sub 1020 or 1030 to a Sub Controller using DSX Leased Line Modems



## Sub 1040 to a Sub Controller using DSX Leased Line Modems



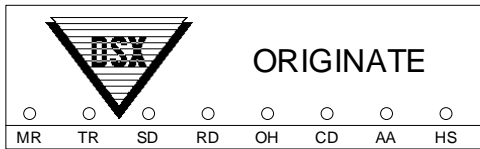
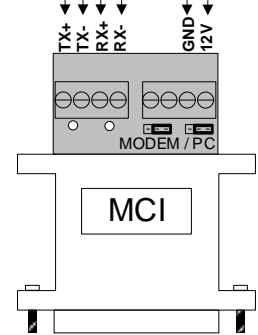
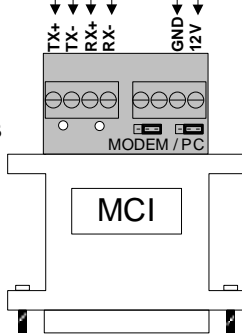
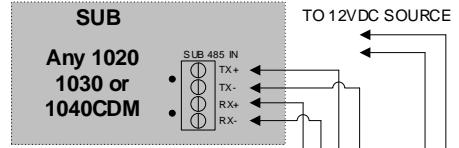
**Note ///** This drawing does not provide connections from a SUB 1020 or 1030

**Note ///** Leased Line modems cannot be re-configured to be Dial-Up modems and Dial-Up modems cannot be re-configured to be Leased Line modems.

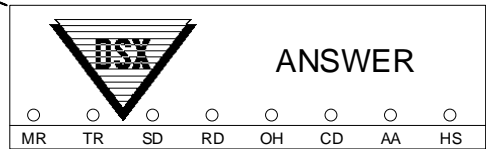
**Note ///** This example provides connection samples for SUB to SUB scenarios only.

**Note ///** J1 & J2 jumpers on MCI must be on Modem side.

**Note ///** It is suggested that power for an MCI at a SUB panel be provided from the Reader Port of the Controller. For the source of backup power from the Controller.

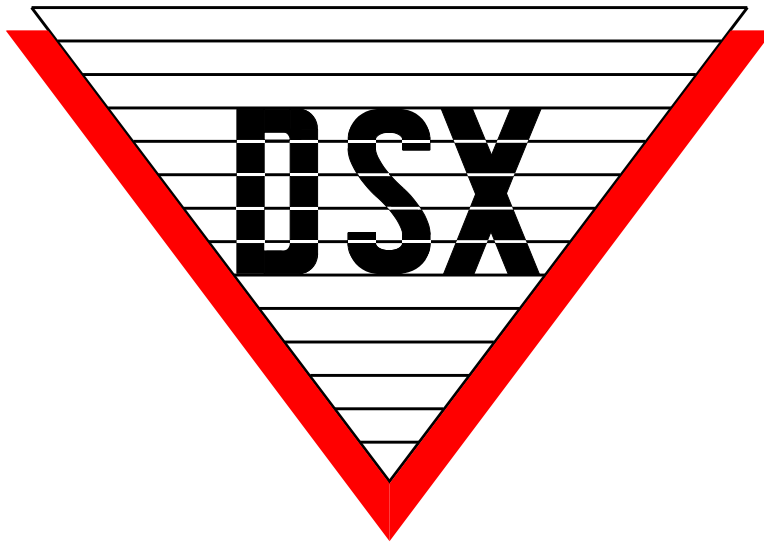


Leased Line provided by Telephone Co.





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