DRAGON

manual version 1.7

Contents

DRAGON TOP PANEL

TX1:
XMIT(Green)- Lit when the associated transmitter is on.
UNLOCK(Red)- is lit if the associated transmitter has an RF problem - contact factory.

TX2:
same as TX1

CONTRAST SLIDE CONTROL:
Adjusts the contrast of the LCD display.

AUDIO SPEAKER:
Outputs tones that indicate DRAGON functions.

128 x 240 PIXEL LCD DISPLAY

KEYPAD:
1-9,0 are used for frequency and channel entry.

ENTER is used to initiate parameter entry in the main screen and to display unit information in the main menu.

ESC is used to exit entry and to enter the main menu. It is also used to exit menus to return to the main screen.

TX1 is used to turn on and off transmitter 1.

TX2 is used to turn on and off transmitter 2.

RECALL is used to enter the frequency/power recall menu.
SAVE is used to enter the frequency/power save menu.

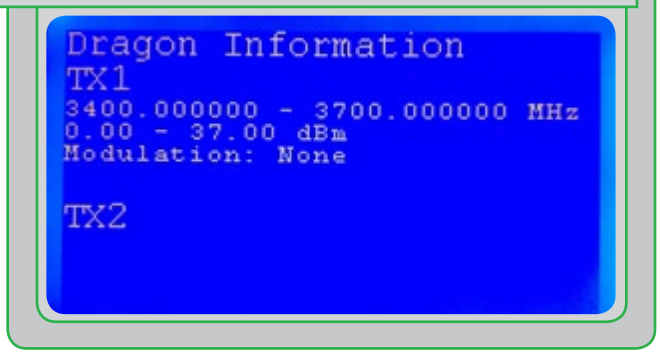
MAIN POWER ON/OFF SWITCH

POWER/FREQUENCY KNOB:
Is used to change selected transmitter parameters (frequency or power),the current parameter controlled by the knob is displayed on the last line of the main screen and selected using the main menu.

DRAGON STARTUP SCREEN

Upon powering up the DRAGON unit, the user will first see a startup screen with the BVS and DRAGON logos. The unit's serial number (blocked here) is also dispayed at the left of the screen. The following screen displays current status of unit.

DRAGON INFO SCREEN



DRAGON TRANSMITTER
Version 1.01

TX1: 3400 - 3700 MHz
Power: 00.0 to 37.0 dBm
Modulation: None

TX2:

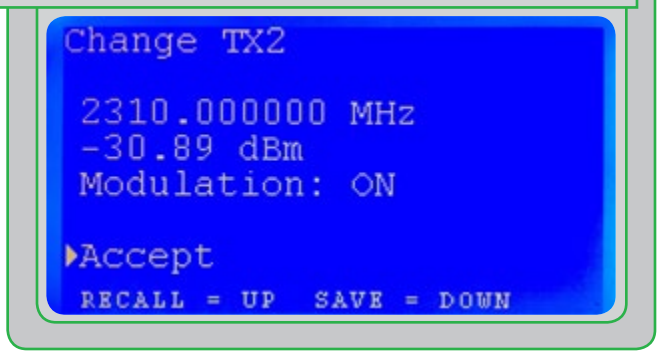
The UNIT INFORMATION SCREEN displays information pertaining to the DRAGON UNIT (Version, Serial Number, Calibration Date and Owner) and to each installed transmitter.

Frequency Range: displays the base to the top (maximum) frequency.

Power: displays the minimum to the maximum output power of the transmitter. If the displayed dBm have a decimal point, the transmitter power step is .5 db. If there is not a decimal point displayed in the min/max dBm, the transmitter power step is 1 db.

Modulation: Dragon allows optional modulation schemes to be installed. Check with your BVS sales team for options and pricing at sales@bvsystems.com

DRAGON MAIN SCREEN



line #
1 Change TX2
2 Frequency: 2310.000000 MHz
3 TX1 Power Out: -30.89 dBm
4 Modulation: ON
5 Accept

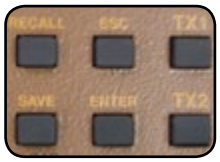
The MAIN SCREEN displays the current DRAGON status and is also used for parameter entry. After changes are made, scroll down to Accept and press ENTER to save changes made to the TX (TX1 or TX2) shown at the top. Press ESC at anytime to leave this menu without saving any changes.

TURNING ON A TRANSMITTER

To turn on a transmitter, first set the desired output frequency and power level. Press TX1 to turn on transmitter 1, TX2 to turn on transmitter 2.

While either transmitter is on, the output power is continually monitored and adjusted so that the output is held to the displayed dBm level. While a transmitter is on, NO parameter change is allowed. Pressing the following keys will cause the transmitter output to turn off:

ENTER, ESC, RECALL, SAVE, TX1, TX2



Turning the FREQUENCY/POWER knob will also cause the transmitter to shut down unless the knob has been turned off via the main menu.

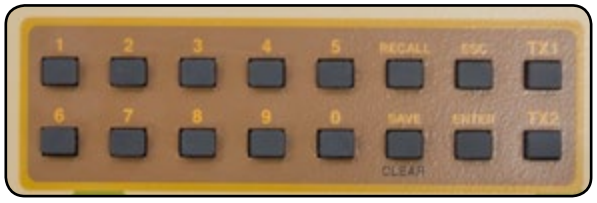
NORMAL TRANSMITTER TURN OFF

To turn off either transmitter, press TX1 or TX2.

CHANGING MAIN SCREEN PARAMETERS USING THE FREQUENCY/ POWER KNOB

To change either frequency or power using the knob, the required parameter to change must first be selected using the MAIN MENU. The current parameter that the knob will change is indicated on line 9 of the display. If a parameter is selected and the knob is turned while the transmitter is on, the transmitter is first turned off. To prevent movement of the knob from turning the transmitter off, select KNOB OFF in the main menu.

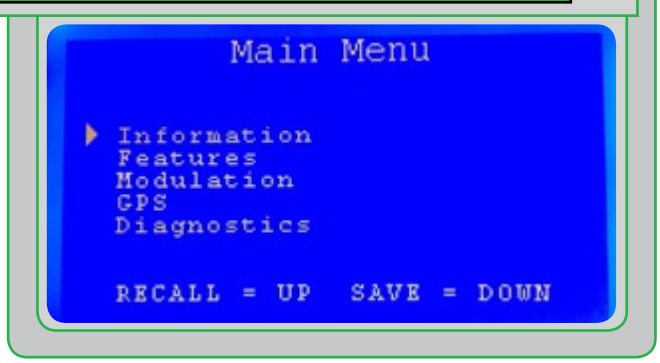
CHANGING MAIN SCREEN PARAMETERS USING THE KEYPAD



To change any parameter on the MAIN SCREEN, press the ENTER key. Note that if a transmitter is on, pressing ENTER causes the transmitter to be shut off. The left most digit of TX1 frequency is highlighed. Change the highlighed digit using the digit keys or the knob. Press enter to move right 1 digit, press the CLEAR key to move back (left) 1 digit. When ENTER is pressed on the rightmost digit of a parameter, the highlight moves to the leftmost digit of the next parameter. To leave the current parameter unchanged, press the ESC key. The highlight will move to the leftmost digit of the next parameter.

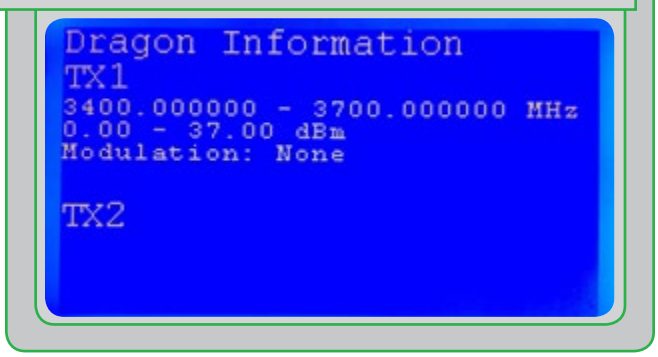
DRAGON MAIN MENU SCREEN

Press ESC to enter this MAIN MENU. Users may select and view Information, Features, Modulation, GPS and Diagnostics using the KEYPAD buttons RECALL (UP) and SAVE (DOWN) as arrow keys. Press ENTER to make a selection or ESC to go back to MAIN PARAMETERS screen.



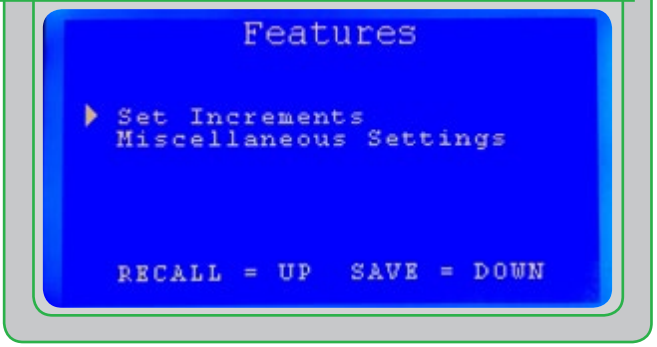
DRAGON INFORMATION SCREEN

The INFORMATION screen displays the currently installed TX modules and their respective frequency ranges (MHz or GHz), power output ranges (in dBm) and optional modulation schemes (UMTS, LTE, CDMA, WiMAX, etc.)



DRAGON FEATURES SCREEN

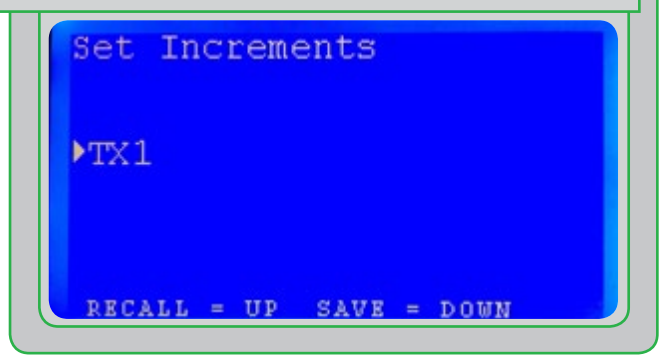
The FEATURES menu allows the user to set increments or step sizes in output frequency and power levels. Use the KEYPAD buttons RECALL (UP) and SAVE (DOWN) as arrow keys. Press ENTER to make a selection.



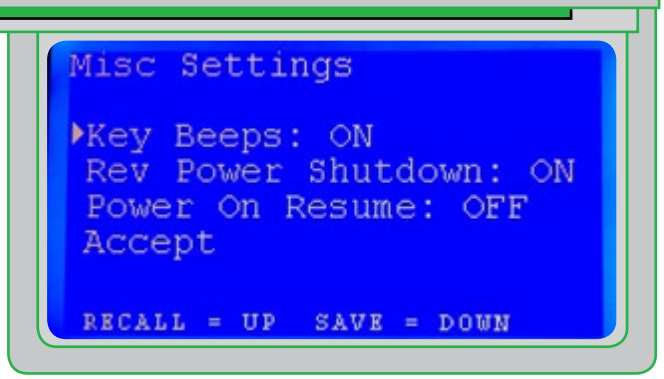
SET INCREMENTS

Within the SET INCREMENTS menu, choose your TX first. Use the KEYPAD buttons RECALL (UP) and SAVE (DOWN) as arrow keys. Press ENTER to make a selection.

Once in the EDIT INCREMENTS menu, use the KNOB or KEYPAD buttons RECALL (UP) and SAVE (DOWN) as arrow keys. Once you have made the changes, scroll down to ACCEPT and press ENTER to make save settings.



MISC SETTINGS



MISC SETTINGS contains ON / OFF toggles for audible keypad "beeps", Rev Power Shutdown and Power On Resume.

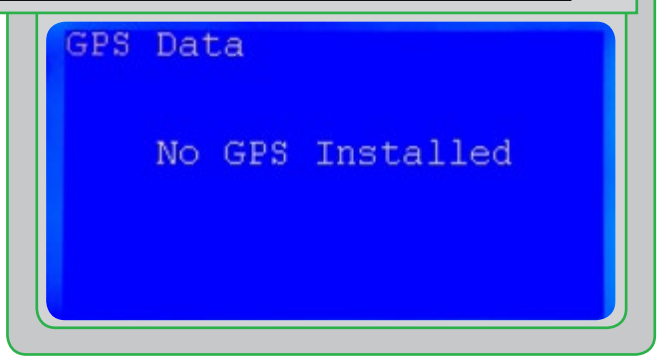
The Key Beeps are just audible indicators for keypad entry using the Tortoise's built-in speaker.

Rev (Reverse) Power Shutdown monitors the power being reflected by the antenna. If it exceed a certain threshold, the power amplifier is shut down to protect it from overheating. The threshold can be exceeded if the Tortoise is transmitting at high power into an unmatched load, such as a damaged (or missing) antenna. This setting is set to ON by default.

Note: Users should consult with BVS technical support before turning this setting OFF as it could damage the unit.

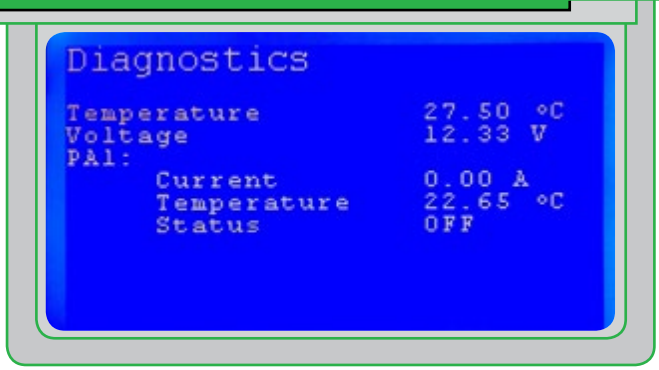
The Power On Resume toggle is for unexpected power outages. If either or both transmitters is ON when the unit loses power (or is manually turned off) and TX Resume is ON, the transmitter(s) that were on when power is restored will resume transmitting.

GPS DATA



If a GPS receiver is installed in your Dragon and has synced, you will see GPS details including date, time, satellites, status, latitude, longitude and height. The GPS receiver is optional so contact sales@bvsystems.com or call 732-548-3737 if you require GPS data.

DIAGNOSTICS

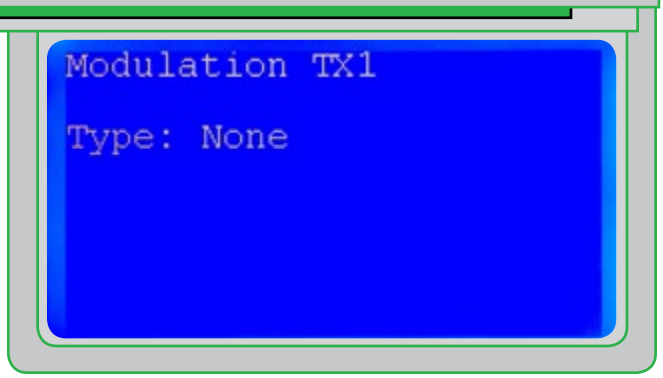


The Dragon DIAGNOSTICS screen displays the current temperature, power (watts and amps) and ON / OFF status of each TX amplifier. Press ESC to return to the previous menu screen.
GPS DATA

Once the GPS receiver has synced to satellites, you should receive GPS details including date, time, satellites, status, latitude, longitude and height. The GPS receiver is optional so contact sales@bvsystems.com or call 732-548-3737 if you require GPS data.

MODULATION

The MODULATION menu displays all installed TX modules and allows the user to choose one for more information. All modulation is optional so if you need a CDMA, LTE, WiMAX, UMTS or custom scheme, contact sales@bvsystems.com or call 732-548-3737.



BVS Dragon Controller (v1.00)
Application Software

PC Requirements
Pentium II
500 MHz
64MB RAM
100MB free on Hard Drive
Serial Port between COM1: and COM4:

Introduction
The Dragon Controller application software is the Windows 95/98 interface that enables a user of the BVS Dragon Transmitter to control the unit for desired performance.

Certain operations such as modification of frequency and transmit power can be accomplished by using the Dragon Controller software.

The following sections outline the operation of the Dragon Controller in greater detail.

Application Overview
The Dragon Controller application mimics the display panel for the Dragon. The status is reported from the Dragon and updated on the PC display. Different commands can be sent to the Dragon from the software to control certain parameters of the transmitter.

The main menu contains three different submenus. The first submenu is FILE. The user may exit the application from this submenu.

The final submenu is HELP. In this submenu, this user manual can be brought up. The About box, displaying version information, is also available.

The main screen of the Dragon Controller can be seen in Figure 1. In addition to the status being updated in the display, the Xmit simulated LED will light up during a transmit condition for either transmitter.

The status bar of the Dragon Controller displays unit information such as the calibration date, the serial number, the owner, and firmware version. The frequency range for each transmitter and the PC system clock are also displayed.

The individual features of the application software are discussed in the following sections.

FIGURE 1 – BVS Dragon Controller

Installing the Application

The application is installed by placing the CD provided into an appropriate drive. If the CD's main program does not come up within 15-20 seconds, run AUTORUN.EXE from the root directory on the CD. From the main screen, select PC Software/Drivers. Choose the Dragon Controller button and InstallShield will prompt for further installation questions. After the installation is completed, an icon will be created in the folder specified during the installation process.

Starting the Application

Make sure that the Dragon is running and connected to a serial port on a PC using the cable packed with the unit. Clicking on the Dragon Controller icon starts the Dragon Controller application. When the PORT screen appears, choose the port to which the Dragon is connected.

When the main screen appears, check the status bar for verification that the connection was made to the Dragon. There should be a circle in the lower left-hand corner of the screen which is spinning if data is being received. You are now ready to control the Dragon.

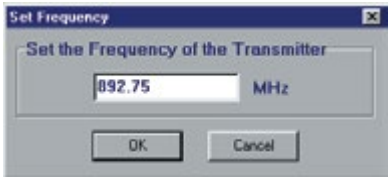


FIGURE 2 – Update Frequency Dialog

Setting the Frequency

Clicking once on the frequency in the display box may set the frequency of the Dragon. The dialog box in Figure 2 then appears. Enter a frequency in the range of the Dragon and click OK. Within a couple of seconds the status will reflect the new frequency. If the frequency selected is between channels, the Dragon will correct to the nearest channel. NOTE: If the Dragon is transmitting, the frequency will not be updated.

FIGURE 3 – Update Power Dialog

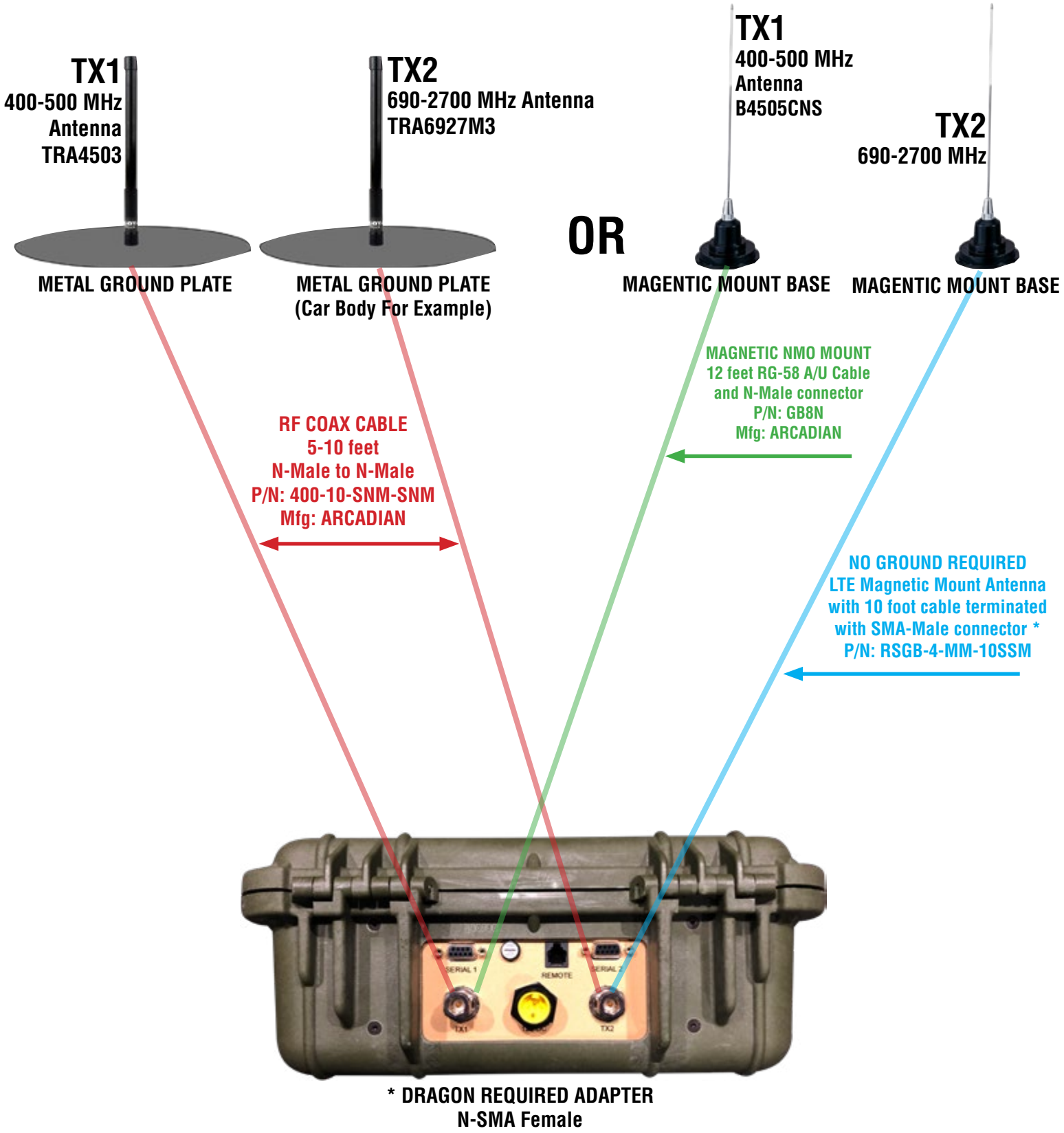
Setting the Power

Clicking once on the power in the display box may set the power of the Dragon. The dialog box shown in Figure 3 appears. Enter in a power in the range of the Dragon and click on OK. Within a couple of seconds the status will reflect the new power output setting. If the power selected is out of range, the Dragon will correct to the nearest valid power value. NOTE: If the Dragon is transmitting, the new power value will not be accepted.

Transmission

Transmission may be started or stopped by using the two buttons provided on the application main screen labeled TX1 and TX2. Dragon allows for both transmitters to work simultaneously.

RECOMMENDED DRIVESTUDY SETUPS



* DRAGON REQUIRED ADAPTER
N-SMA Female

Glossary of Acronyms

AC	Alternating Current
A/D	Analog to Digital converter
AGC	Automatic Gain Control
Applet	a small Application
BER	Bit Error Rate
BPSK	Binary Phase Shift Keying
BW	Band Width
CDMA	Code Division Multiple Access (spread spectrum modulation)
DC	Direct Current
D/A	Digital to Analog
dB	decibel
dBm	decibels referenced to 1 milliwatt
DOS	Digital Operating System
DSP	Digital Signal Processing
FIR	Finite Impulse Response
GHz	GigaHertz
GPS	Global Positioning System (satellite based)
GPS diff.	GPS error correction signal which enhances GPS accuracy
IF	intermediate frequency
I and Q	In phase and Quadrature
kHz	kiloHertz
LCD	Liquid Crystal Display
LO	Local Oscillator
Mbits	Megabits
MHz	MegaHertz
modem	modulator/demodulator
PC	Personal Computer
PCS	Personal Communications Service (1.8 to 2.1 GHz frequency band)
PN	Pseudo Noise
QPSK	Quaternary Phase Shift Keying, 4-level PSK
RF	Radio Frequency
RSSI	Receiver Signal Strength Indicator
UCT	Universal Coordinated Time
VAC	Volts Alternating Current
VGA	Video graphic