Sea Tel VSAT Dual Antenna Arbitrator Training Rev C3

COBHAM

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ADVANCED ELECTRONIC SOLUTIONS | AVIATION SERVICES | COMMUNICATIONS AND CONNECTIVITY | MISSION SYSTEMS

Sea Tel VSAT Dual Antenna Arbitrator Training

Rev C3

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Arbitrator front view

On the front, there are 5 buttons and a power switch.

Power switch
Will turn the arbitrator on and off.

ANT A and ANT B

Allows the user to manually switch between the two antennas.
The lights inidcate which antenna is the active one.

Manual

Allows the user to use the ANT A and ANT B buttons to switch between the two antennas.

Auto

Puts the system into auto mode. The switching is controlled by the DAC or MXP.

Reset

Will soft reset the arbitrator.

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Arbitrator rear view

Click on the socket names to highlight the sockets.

AC power socket:100 to 240V AC mains supply.

Relay connections: These will change depending on which version has been fitted.

- Click here for the -1 version.
- Click here for the -2 version. Able to inject 10MHz reference to the **non** active antenna BUC. A short sma to sma cable must be fitted.
- Click here for the -3 version. For systems where the BUC DC power is supplied from the modem. TX uses N type sockets.

10MHz Out: Used only on the -2 version. There is short link between this port and 10MHz in.

DAC A & DAC B TMS:DAC A will connect to DAC (TMS) or MXP A's modem port and DAC B will connect to DAC (TMS) or MXP B's modem port.

Modem: This will connect the VSAT modem I.E Via the console port on an Idirect Modem.

OBM: Used to connect Out of band management to the modem.

Ethernet socket: This would be connected to a switch to allow access to the web interface and OpenAMIP connectivity.

Console port: Used for serial connection to the arbitrator by the means of CLI commands.

Arbitrator rear view

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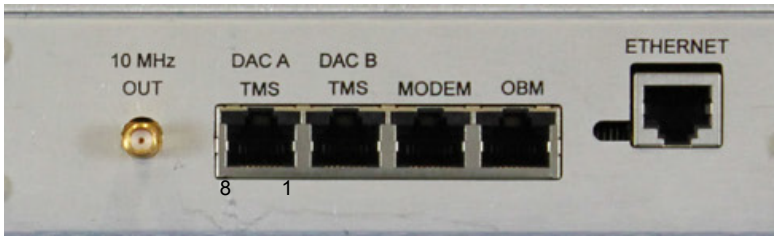
Pinouts



	DAC A and B	Modem	OBM
Pin 1	Not used	Control to OBM device	Control from OBM device
Pin 2	Modem RX Lock from modem to DAC	Modem RX Lock (from Modem)	Not used
Pin 3	Not used	TX to OBM device	TX from modem
Pin 4&5	Ground	Ground	Ground
Pin 6	GPS data from DAC or MXP	GPS data (from Arbitrator) / TX from OBM device	GPS data (from Arbitrator) / TX from OBM device
Pin 7	SW2 for Arbitrator switching	Mute (to Modem)	Mute (to Modem)
Pin 8	Not used	Control from OBM device	Control to modem

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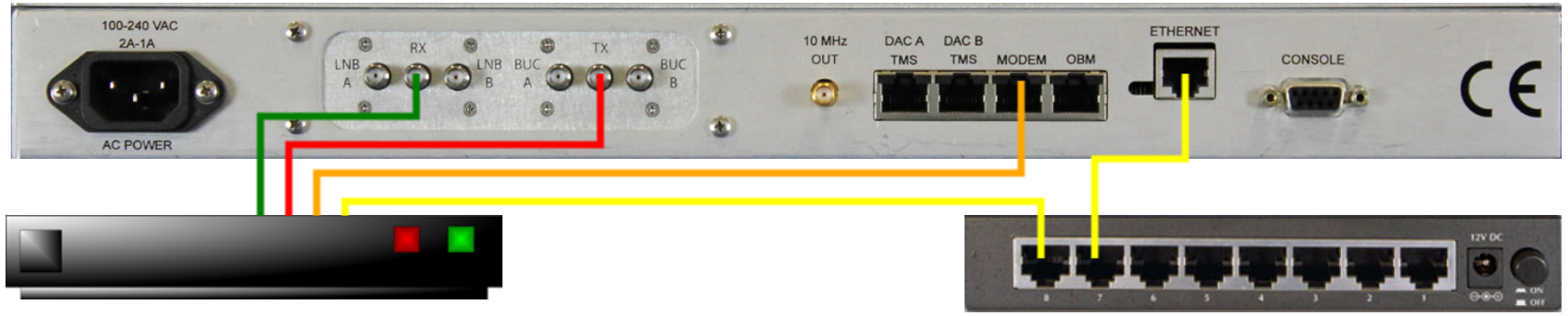
Connections to the modem

The RF is switched via relays. The common port is the one that always goes to the VSAT modem.
Transmit is labeled as TX and recieve is labeled as RX.
Click here to add the coax cables

Next is to connect the serial connection. This is for TX mute, RX lock and GPS. This serial connection is only needed when not using openAMIP or ROAM.
(Note: TX mute is not done by the DAC or MXP, it's controlled by the arbitrator only when using the serial connection.)
Click here to add the serial modem cable

Next is to connect the Ethernet cables.This is for the web interface, ROAM or openAMIP if used.
(Note: TX mute is passed from the active antenna to the modem via the arbitrator.)
Click here to add the Ethernet cables



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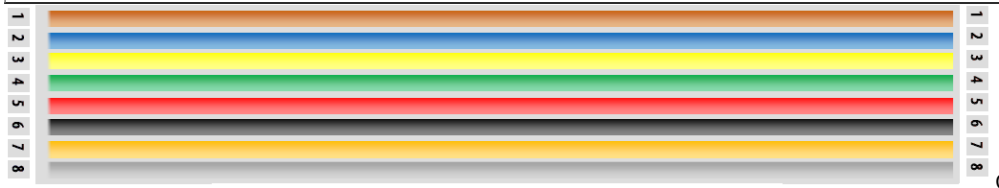
Connections to the modem

Idirect:
The Idirect modem is connected to the arbitrator via a straight though RJ45 cable. Modem on the left and Arbitrator on the right.

Pin 1	Not used
Pin 2	Modem lock, when the modem has RX lock this pin will go from high voltage to low voltage. We call this modem low lock. For this function to work you must have system type 2 added in the DAC system type or low lock in the MXP and RX lock on. The arbitrator does not use this RX lock and passes the voltage state on to the DAC or MXP. I.E. No RX lock = 12Vdc between pin 2 and pin 4. RX lock = 0Vdc between pin2 and pin 4.
Pin 3	Not used
Pin 4,5	GND
Pin 6	GPS to the modem.
Pin 7	TX mute, this is controlled by the arbitrator not the DAC or MXP. For this modem, the mute is activated when the voltage is high. In the Arbitrator there is a Mute Output polarity this should be set to high voltage mute. I.E. TX mute active, no TX = 12Vdc between pin 7 and pin 4. TX mute not active, TX allowed = 0Vdc between pin7 and pin 4.
Pin 8	Not used



Click image to enlarge.

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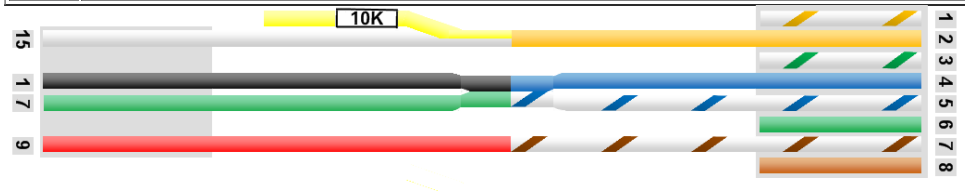
Connections to the modem

Comtech:
The Comtech modem is connected to the arbitrator via the Comtech harness and a RJ45 cable. Modem on the left and Arbitrator on the right.

Pin 15	Modem lock, Normally open contact on RX relay. When the modem has RX lock this pin will go from high voltage to low voltage. We call this modem low lock. For this function to work you must have system type 2 added in the DAC system type or low lock in the MXP and RX lock on. The arbitrator does not use this RX lock and passes the voltage state on to the DAC or MXP. Because the RX lock is done via a relay in the Comtech, voltage may need to be added to this pin using the yellow wire with the in line 10K resister. Voltage can be found on the TMS strip or nema port on the MXP. I.E. No RX lock = 12Vdc between pin 15 and pin 7. RX lock = 0Vdc between pin 15 and pin 7.
Pin 1	GND
Pin 7	Common contact for the RX lock relay and should be connected to GND
Pin 9	TX mute, this is controlled by the arbitrator not the DAC or MXP. For this modem, the mute is activated when the voltage is low. In the Arbitrator there is a Mute Output polarity this should be set to low voltage mute. I.E. TX mute active, no TX = 0Vdc between pin 9 and pin 1. TX mute not active, TX allowed = 12Vdc between pin 9 and pin 1.



Click image to enlarge.

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Connections to the DAC's

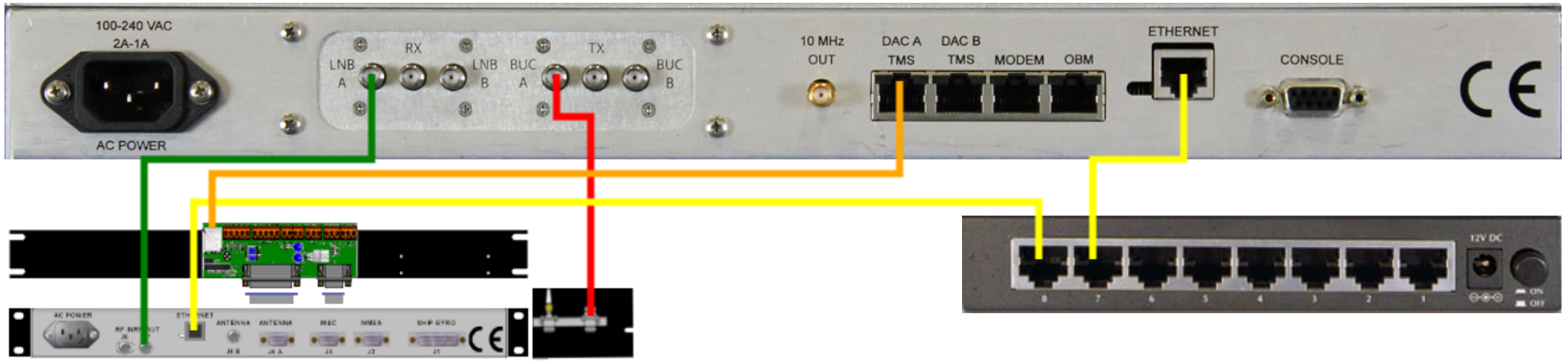
RX is from the DAC output on the tuner card and TX goes directly to the MUX panel to terminate with the ships cable.
Click here to add the coax cables.

Next is to connect up the serial connection.
This is for arbitrator switching, RX lock and GPS. This goes to the TMS.
(Note: The TX mute is not done by the DAC it's controlled by the arbitrator only)
Click here to add the serial modem cable

Next is to connect the Ethernet cables.This is for the web interface, ROAM or openAMIP if used.
Click here to add the Ethernet cables

For DAC B, connect in the same way but use the B ports instead on the arbitrator.

16 MUST be added to both DAC system types and having JP4 installed on the TMS may stop the RX lock from working when not using openAMIP.



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Connections to the MXP's

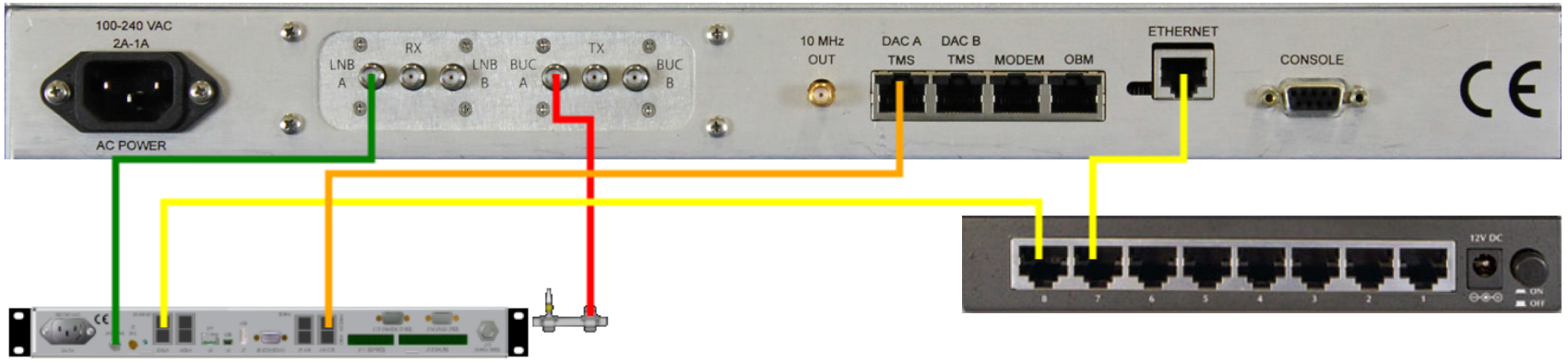
RX is from the MXP output and TX goes directly to the ships cable.
Click here to add the coax cables.

Next is to connect the serial connection.
This is for arbitrator switching, RX lock and GPS. This goes to the modem port on the MXP.
(Note: The TX mute is not done by the MXP it's controlled by the arbitrator only)
Click here to add the serial modem cable

Next is to connect the Ethernet cables.
This is for the web interface, ROAM or openAMIP if used.
Click here to add the Ethernet cables

For MXP B, connect in the same way but use the B ports instead on the arbitrator.

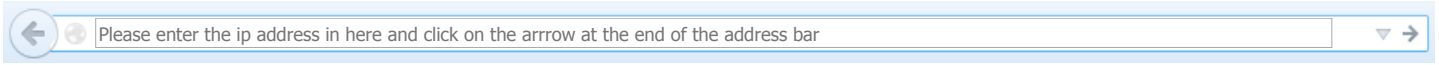
Block output under interfaces MUST be set to Polarity Hi in both MXP's.
This CLI command should be entered in to each MXP via the CLI page. set antenna dual_mode on

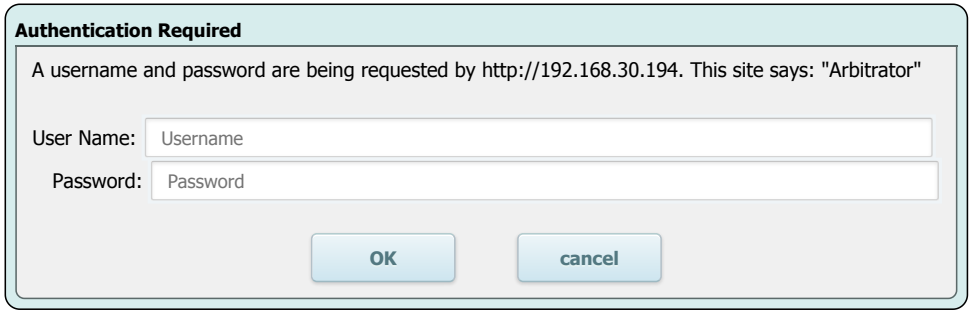


Logging In

To login, open your web /broswer and enter the default IP address 192.168.30.194 or 192.168.20.194 in the address bar.

Default login details are:
User Name: seatel
Password: 1234





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Home Page

This page displays the arbitrator software version, which antenna is active and if the arbitrator is in manual or auto mode.

When in auto mode the A and B buttons will not have any affect.

Press the buttons on the front panel to see the lights working.

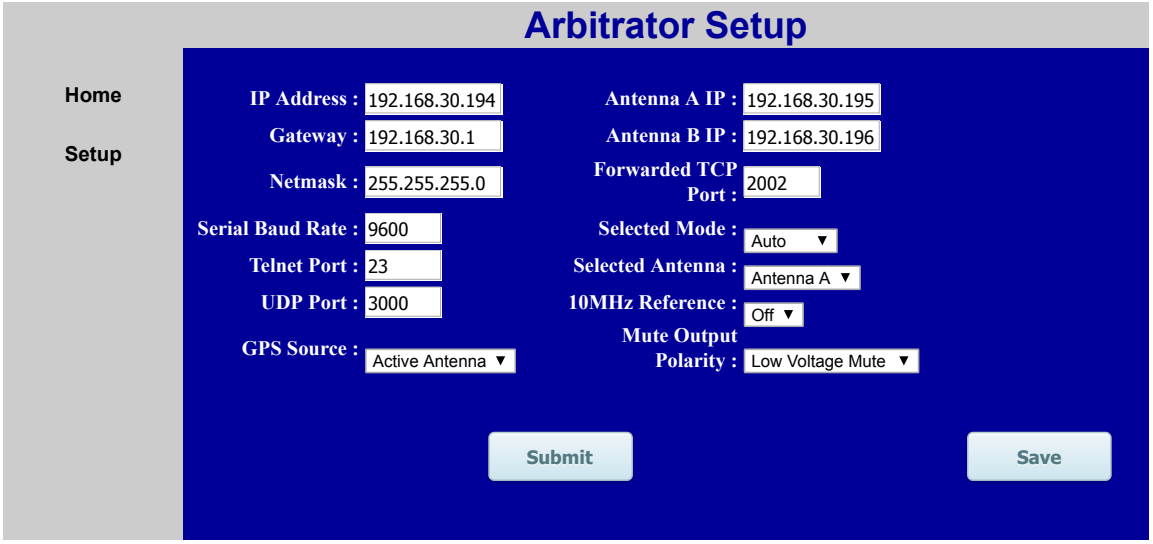
The setup button will take the user to the setup page. Press Setup to continue.

Setup page

The key settings are:

- IP Address: This is the Arbitrator IP address, when using OpenAMIP the modem needs to send all the commands to this IP address.
- Antenna A and B IP: These must be the same as the IP address of DAC A and B other wise the OpenAMIP commands will not get passed on to the DAC's.
- Forward TCP Port: This must be set to the port which has been setup in the DAC's for OpenAMIP commands, default is 2002.
- Mute output polarity: This must be set correctly depending on the VSAT modem I.E. Idirect will be high voltage mute and Comtech will be Low voltage mute.

To save the settings, **Submit** must be pressed before pressing save.
Please hover over the names of the fields for more information.



Resource Reference

Serial connections between the MXP/ DAC's and arbitrator:

- These two connections must be used at all times.
- These are used to switch the arbitrator when the one of the systems in a blockage zone, or in an error state.
- When the modem is using serial connection (non openAMIP setup) the GPS is sent to the modem via the arbitrator on these cables.

Serial connection to the modem console port (Idirect modem non openAMIP) or to Comtech modem:
This cable is used for the following:

- To send serial GPS to the modem from the active system.
- TX mute to the modem from the arbitrator (the arbitrator controls the TX mute).
- RX lock from the modem to the arbitrator which passes this on to both antennas.

OpenAMIP setup:

- All the openAMIP commands are sent to the arbitrator , the arbitrator will forward the commands to both systems.
- OpenAMIP commands from the active system only will be passed to the modem, when the arbitrator switches the commands from the second system will then be passed to the modem.

Arbitrator not switching:

- Make sure both serial connections are installed between the arbitrator and the MXP/DAC's.
- Make sure the serial connections are not reversed I.E. antenna A is connected to Antenna A on the arbitrator.
- The non-active system is not in a blocked or error state.
- The MXP/DAC's are set to blockage high state.
- DAC must have 16 in the system type no matter what modem is used.
- MXP must have the Block output set to high no matter what modem is being used.

Antennas keeps retargeting or modem lock not working:

- Idirect modem when using openAMIP must have TX handshaking enabled.
- Comtech modem make sure voltage is added to the RX lock pin if needed.
- DAC must have 2 added to the system type.
- MXP must have lock enabled under the modem settings on the interface page.
- MXP must have the modem I/O set to openAMIP with an openAMIP setup.
- DAC may need 128 added to the system to reverse the modem input logic when not using openAMIP.
- MXP may need the Lock input changing or the sense voltage reducing when not using openAMIP.

Resource Reference continued

Modem is muted when it has RX lock:

- With a non openAMIP setup make sure the Mute out polarity is set correctly for the modem being used.
- Both systems are in a blockage zone or an error state.
- Serial connections to the arbitrator from the MXP/DAC's modem port are not installed.

OpenAMIP not working:

- Modem is set up for openAMIP.
- Antenna IP address is set to the Arbitrator IP address in the option file.
- IP addresses are set correctly in the MXP/DAC's and arbitrator.
- Port numbers are correctly set in all the units, default openAMIP is port 2002.
- Ping each device from the modem to make sure a reply is received.
- Make sure the etherent switch being used is able to pass data on port 2002.
- Test the openAMIP using a PC:
  - Connect up a PC and assign it the same IP address as the modem.
  - Open progterm or any type of hyper terminal session to the arbitrator IP address on port 2002.
  - Once the port is connected a 5 will be displayed, this is the active antenna sending the keep alive to the modem set to 5 seconds.
  - Type A 5 and then the s command will be displayed for a short period of time,
    this is the antenna send the antenna status command which is antenna is functional followed by TX allowed for the first 2 numbers after the s.
  - Switch the arbitrator to the second antenna and try the same test again.