Configuration Guide
Sea Tel Antenna Controller Unit

Written for RMOS 4.3
October 2010

The purpose of this document is to detail the installation and configuration of a Sea Tel Antenna Controller Unit (ACU) for use with Uplogix appliances.

Features

- Supports DAC (ACU) software versions 4.10 and later

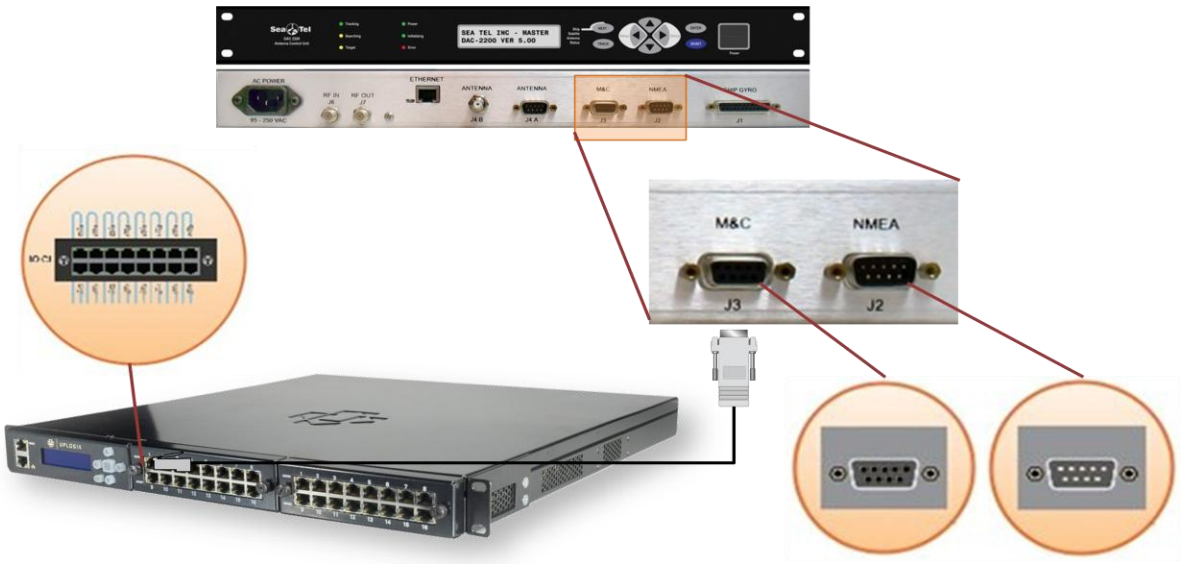
Terminology

Acronyms and abbreviations used in this document:

- ACU – Antenna Controller Unit
- DAC – Digital Antenna Controller
- DacRemP – DAC Remote Panel
- M&C – Managing and Controlling
- PCU – Pedestal Control Unit

Physical Connection

There are two connection points from the Sea Tel ACU (M&C and NMEA) to the appliance. The M&C connection is used to interactively manage the Sea Tel ACU and PCU. The NMEA connection is used to collect GPS information in NMEA-183 format from the Sea Tel ACU. Both M&C and NMEA information may be retrieved from the M&C port.



The NMEA port should be used when the M&C will be utilized for extended interactive user sessions so GPS coordinates can be collected without interruption.

The M&C port on the Sea Tel ACU can be connected to the Uplogix 3200 appliance with standard CAT5 cables and DB-9 to RJ-45 adaptors. The M&C port requires a rolled cable and the NMEA port requires a straight through cable.

Configuring the Port

A few important items to note prior to configuration:

- The default baud rate for the Sea Tel M&C port is **9600** on DAC 2202/2302/2200 series and **4800** on DAC 03/97 systems. The Uplogix appliance will need to be configured with the appropriate rate.
- The default baud rate for the Sea Tel NMEA port is **4800**. If this value has changed, the Uplogix appliance will need to be configured with the new rate.
- The ACU's Serial M&C port does not require a username or password, although the initialization routine will ask for them. Bypass this prompt by hitting the return key.

Once the Sea Tel ACU is properly connected to the Uplogix appliance, take the following steps to configure the port:

Open a connection to the Uplogix appliance and navigate to the port you wish to initialize.

```
[admin@A101100391]# port 1/3
 native
```

Use the **config init** command to configure the port for use with the M&C port on the Sea Tel ACU. The make should be **SeaTel** and the OS **DAC**. Model and OS version are optional fields and will be populated automatically as part of the config init process. Press [Enter] when accepting default values.

```
[admin@A101100391 (port 1/3)]# config init
--- Enter New Values ---
description: []: Starboard Aft Antenna
make: [native]: SeaTel
model: []:
os: []: DAC
os version: []:
management IP: []:
Configure dedicated Ethernet port? (y/n) [n]:
console username: []:
console password []:
confirm password:
enable username: []:
enable password []:
serial bit rate [9600]: 9600
serial data bit [8]:
serial parity [none]:
serial stop bit [1]:
serial flow control [none]:
Do you want to commit these changes? (y/n): y
```

When the **config init** command completes, run **terminal** to open a terminal session with the Sea Tel.

```
[admin@A101100391 (port 1/3)]# terminal
Press ~[ENTER] to exit
Connecting ...
beginning pull of running-config
running-config saved to archive as current.
Console session started.
```

If the port has been properly configured, you will be able to interact with the ACU using standard M&C commands (ie. “S” immediately returns the Status). If you are not able to interact with the Sea Tel ACU using the appropriate command codes, ensure that the physical connection is correct and that the serial settings on the Uplogix appliance match those on the Sea Tel ACU. Use the escape sequence (~[enter]) to exit the terminal session with the ACU.

The NMEA port should be used if NMEA formatted GPS is distributed to various services such as location coordinates to a modem or a location tracking program. Use the **config init** command to configure the port for use with the NMEA on the Sea Tel. The make should be **SeaTel** and the OS NMEA. Model and OS version are optional fields and will be populated automatically as part of the **config init** process.

```
[admin@A101100391 (port1/4)]# config init
--- Enter New Values ---
description: []: Seatel GPS
make: [native]: seatel
model: []:
os: []: NMEA
os version: []:
management IP: []:
console username: []:
console password []:
enable username: []:
enable password []:
serial bit rate [9600]: 4800
serial data bit [8]:
serial parity [none]:
serial stop bit [1]:
serial flow control [none]:
use null modem (rolled cable to device)? (y/n) [y]:
Do you want to commit these changes? (y/n): y
```

Automated Functions

Automated jobs are scheduled using the assigned default intervals during the config init process. For the Sea Tel ACU, these jobs include **pullRunningConfig** and **deviceInfo**.

Device Info

The **deviceInfo** job queries the Sea Tel ACU for information fields such as hostname, make, model, and OS version. By default, this job runs every 5 minutes. To view the collected data, use the **show info** command.

```
[admin@A101100391 (port1/3)]# show info
Hostname: SS Envoy
Description: Starboard Aft Antenna
Make: SeaTel
Model: DAC 2202
OS: DAC
OS Version: 6.05
Management IP: 192.168.33.100
```

Running Config

The Sea Tel ACU has one configuration file that is pulled by the **pullRunningConfig** job and is stored on the appliance as the running-config. To pull this file manually, use the **pull running-config** command.

```
[admin@A101100391 (port1/3)]# pull running-config
beginning pull of running-config
running-config saved to archive as current.
```

Configuration Rollback

The Sea Tel ACU driver includes support for Surgical Rollback™, but is disabled by default. When the **terminal** command is run, the appliance will pull the device configuration before giving control to the user. After the terminal session is closed, the device configuration will be pulled again and compared to the original. If any changes are detected, they will be reported in the device changes log and displayed to the user. If Surgical Rollback is enabled, uncommitted changes will be rolled back.

Configuring Monitors

There are two monitors that are automatically scheduled when a port is configured as Sea Tel:

- **gps:** Collects latitude and longitude information from the PCU's integrated GPS (where available) from the M&C port.

remotestate: Collects information on key antenna variables including heading, azimuth, relative azimuth, elevation, cross level, AGC, AGC threshold, and polarity angle. The monitors are scheduled to run at 30 second intervals by default. If you would like to change the monitor interval, simply reschedule the monitor with the appropriate delay. The syntax for scheduling a monitor is:

config monitors <object> <interface> [ruleList] [:delay]

To schedule the monitors for the Sea Tel ACU, navigate to the port of the device to be monitored.

```
[admin@A101100391]# port 1/3
SeaTel DAC 2202 DAC 6.05
Use the config monitors command to schedule the specific monitor.
[admin@A101100391 (port1/3)]# config monitors gps :60
Job was scheduled 1: [Interval: 60 Seconds; Mask: * * * * *] rulesMonitor gps
```

GPS information is now being monitored.

```
[admin@A101100391 (port1/3)]# config monitors remotestate :30
Job was scheduled 2: [Interval: 30 Seconds; Mask: * * * * *] rulesMonitor remotestate
```

Remotestate information is now being monitored.

Displaying Monitors

To display scheduled monitors, use the **show monitors** command from the port.

```
[admin@A101100391 (port 1/3)]# show monitors
```

The result will display index number, time interval and mask, interface name, applied rules, and delay time.

```
1: [Interval: 00:00:60 Mask: * * * * *] rulesMonitor gps none “” 60
2: [Interval: 00:00:30 Mask: * * * * *] rulesMonitor remotestate none “” 30
```

Displaying Monitor Results

To display monitor data, use the **show** command from the port. The command syntax is:

show <monitor name>

For example:

```
[admin@A101100391 (port1/3)]# show remotestate
Timestamp  Heading  Azimuth   Rel. Azimuth Elevation Cross Level   AGC        AGC polang
          (degrees) (degrees)    (degrees) (degrees)   (degrees)        Threshold
--------- --------- --------- ------------ --------- ----------- ------ --------- ------
15:27:48      317.6     343.4         25.7      89.4        90.0   1459      1520  212.0
15:27:26      317.6     343.1         25.4      89.4        89.9   1460      1520  212.0
15:26:48      317.6     342.6         25.0      89.4        89.9   1460      1520  212.0
15:26:26      317.6     342.3         24.7      89.5        90.0   1461      1520  212.0
15:25:48      317.6     341.8         24.2      89.4        90.0   1459      1520  212.0
15:25:10      317.6     341.3         23.7      89.4        90.0   1459      1520  212.0
15:24:48      317.6     341.0         23.3      89.4        90.0   1460      1520  212.0
15:24:11      317.6     340.5         22.8      89.5        89.9   1460      1520  212.0
15:23:48      317.6     340.2         22.6      89.5        89.9   1459      1520  212.0
15:23:11      317.6     339.7         22.0      89.4        90.0   1459      1520  212.0
15:22:40      317.6     339.2         21.7      89.4        90.0   1460      1520  212.0
15:22:10      317.6     338.8         21.4      89.4        90.0   1459      1520  212.0
```

GPS information is available in three areas: As an element to Uplogix alarms and events, as the result of the most-recent coordinate collection, and as a display only artifact in the GPS position. These extensions are required for display of the GPS data. The extensions are described below:

- Events: Shows GPS coordinates associated with Uplogix events
- Most-recent: Displays the most recent valid GPS coordinate from multiple sources
- Position: Displays the GPS coordinate history

Examples of the three GPS monitors:

```
[admin@A101100391 (port1/3)]# show gps events
CDT   Latitude          Longitude         Context Message
----- ----------------- ----------------- ------- ----------------------------------------
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Assimilate completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         User started a terminal session.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Pull running config completed.
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Elevation 90 succeeded
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Elevation 0 succeeded
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Elevation 45 succeeded
10/05 30d 22' 00.000" N 97d 46' 00.000" W         Elevation Range Test succeeded

[admin@A101100391 (port1/3)]# show gps most-recent
Most-recent, port1/1:
CDT        Latitude            Longitude           Heading   Elevation   # Sats
--------   -----------------   -----------------   -------   ---------   ------
15:30:21   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1

[admin@A101100391 (port1/3)]# show gps position
CDT        Latitude            Longitude           Heading   Elevation   # Sats
--------   -----------------   -----------------   -------   ---------   ------
14:59:46   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:00:24   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:00:46   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:01:23   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:02:01   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:02:24   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:17:51   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:18:13   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
15:18:50   30d 22' 00.000" N   97d 46' 00.000" W       0.0         0.0        1
```

For more information on the DAC commands utilized to collect the information in the driver monitors, please refer to appendix A of this document.

Advanced Features

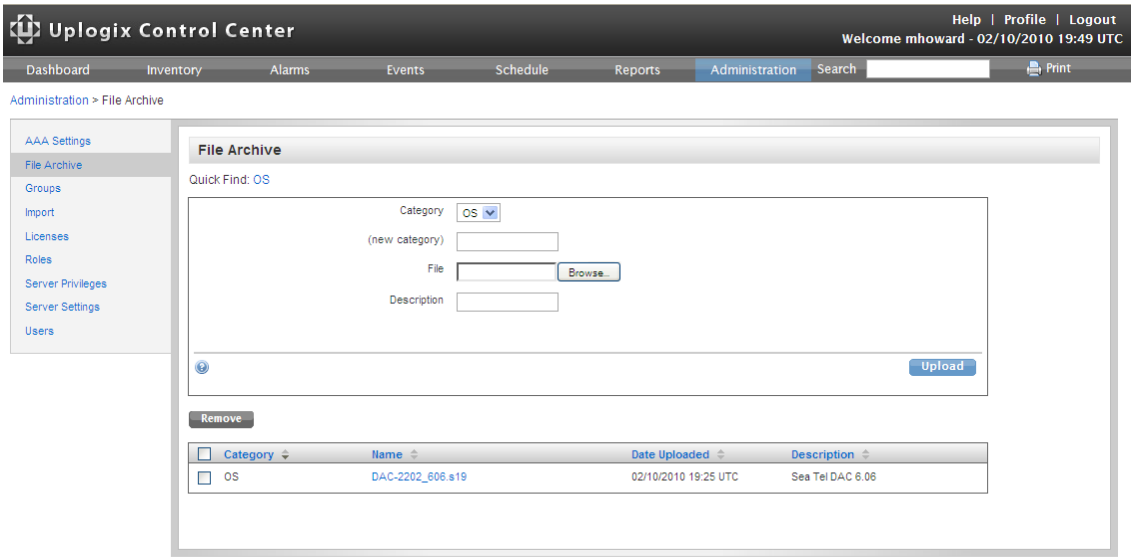
The Sea Tel driver offers several advanced features for interacting with the Sea Tel antenna system. This section describes upgrading a Sea Tel DAC or PCU, displaying additional system logging, and interacting with the DAC directly.

Upgrading a Sea Tel DAC, PCU and CommIF

> **CAUTION:** Not all versions of Sea Tel DAC and PCU code are compatible with all Sea Tel hardware. Ensure that the version of code you are upgrading to is compatible with the hardware. Upgrading the DAC or PCU to non-compatible code could place the Sea Tel in an unrecoverable state.
>
> CommIF module upgrades are only available on CommIF software versions 1.12 or later. Upgrading from a previous version will display and error.

The Sea Tel advanced driver supports upgrades to the DAC, PCU, and CommIF module. CommIF upgrade requires CommIF software 1.12 or later to function. All components may be upgraded separately. Prior to upgrade, it is a best practice to stage the current working version of the ACU, PCU or CommIF code in the Uplogix' target port directory in the event that a recoveryis necessary. A total of six named files can be stored per target port.

To upgrade, first stage the new operating system image(s) on the Uplogix appliance. There are several methods to stage the operating system image. In the below example, the file "**DAC-2202_606.s19**" in category "**OS**" is copied from the Uplogix Control Center "**ems**" to the appliance file archive in the "**os"** directory.




```
[admin@A101100391 (port1/3)]# copy ems OS/DAC-2202_606.s19 os DAC606
37,908 bytes read (100%) done
Retrieved 'DAC-2202_606.s19' from 172.30.50.60.
copy succeeded
```

After the copy is complete, the file will appear in the appliance's directory for that port which is viewable using the **show directory** command.

```
[admin@A101100391 (port1/3)]# show directory
Type    Version   Name
------- --------- ------------
Config
  Running*
        Current   running-config
        Previous  running-config

  Running-Undo*
        Candidate running-config-undo43414.img

OS
        DAC606    DAC-2202_ 606.s19
```

The syntax for the push OS command is:

push OS <Version>

where **Version** is the name of the OS, in this case DAC606.

```
[admin@A101100391 (port1/3)]# push OS DAC606
Transferring 37908 bytes
Image version label: MASTER DAC 2202 VER 6.06
Image type: ACU
Locking external port access.
Starting ACU bootloader.
Erase flash.
Erase flash.
Erase flash.
Transferring 864 lines.
.................................................................................. 11%
.................................................................................. 23%
.................................................................................. 46%
.................................................................................. 57%
.................................................................................. 69%
.....................................................................!.!!............ 92%
.............................................................DONE!
Transfer complete.
Hostname     :
Serial Number:
Make         : SeaTel
Model        : DAC 2202
OS Type      : DAC
OS Version   : 6.06
Uptime       :
Push OS succeeded.
```

Note: As part of the push OS command on the Sea Tel driver, the Uplogix automatically detects the type of OS image (ACU, PCU, or CommIF) and upgrades the correct hardware.

Note it is normal to see exclamation points (!) or the letter S in the output during the upgrade process. An exclamation point (!) indicates a protected sector the bootloader is not able to write against and an S indicates a slow response from the PCU during transfer.

The PCU is upgraded via the same commands as the ACU.

```
[admin@A101100391 (port1/3)]# show directory
Type    Version   Name
------- --------- ------------
Config
  Running*
        Current   running-config
        Previous  running-config

  Running-Undo*
        Candidate running-config-undo43433.img

OS
        215       x03-215.s19
        DAC606    DAC-2202_606.s19

* additional archived versions are available. Execute show dir -v

[admin@A101100391 (port1/3)]# push OS 215
Transferring 19584 bytes
Image version label: xx03 VER 2.15
Image type: PCU
Locking external port access.
Enable PCU bootloader mode.
Normal ACU response
Setup ACU for Remote Module Programming
Checking communication with PCU
PCU responding normally, start Remote Bootloader
Starting PCU bootloader.
PCU bootloader response detected.
PCU bootloader active.
Erase flash.
Transferring 451 lines.
.....................................S..................................... 21%
.....................................S..................................... 44%
.....................................S..................................... 66%
.....................................S..................................... 88%
.............................................T
Re-booting ACU
Transfer complete.
Hostname     :
Serial Number:
Make         : SeaTel
Model        : DAC 2202
OS Type      : DAC
OS Version   : 6.06
Uptime       :
```

```
Push OS succeeded.
```

The upgrade of the CommIF module utilizes the same push OS command, but in addition to CommIF software, requires specialized bootloader software available from Sea Tel support. Please contact Sea Tel support by phone (+1 925.798.2399) or email (satcom.concordsupport1@cobham.com) for assistance with CommIF upgrades.

System Logging Information

When the port is configured as a Sea Tel, the system will log information on DAC status. DAC status is collected with the DAC status monitor command S. The driver captures status information and translates status words into human readable text. The output of the Status messages can be evaluated to customize the Uplogix dashboard display for the Sea Tel port, triangulate a known error condition or forward a syslog message to a network host with the output.

To display the last status response, use the **show faults** command from the port:

```
[admin@A101100391 (port1/3)]# show faults
PCU Status Bit 0, Satellite out of range, PCU Error, AZ Reference Error, Polang Drive Off,
Band Tone Off, Band 13V, AUX is off, Band C, Local-RF 18V, Local Tone Off, No Force NID,
FEC-SCPC
```

For more detailed information on system faults, use the verbose option (**-v**) on the **show faults** command. The verbose command will display the DAC status words and their translation.

```
[admin@A101100391 (port1/3)]# show faults -v
   Word 1: 0x40 (01000000)  64 '@'
   Word 2: 0x40 (01000000)  64 '@'
   Word 3: 0x68 (01101000) 104 'h'
   Word 4: 0x48 (01001000)  72 'H'
Remote RF: 0x40 (01000000)  64 '@'
 Local RF: 0x67 (01100111) 103 'g'
    TDisp: 0x00 (00000000)   0 '\u0000'
Satellite out of range, PCU Error, AZ Reference Error, Polang Drive Off, Band Tone Off,
Band 13V, AUX is off, Band C, Local-RF 18V, Local Tone Off, No Force NID, FEC-SCPC
```

Device Execute

The Uplogix appliance provides the ability to interact directly with the DAC without using the terminal command via the device execute command. The syntax for the command is:

device execute <command>

Where <command> is a properly formatted Sea Tel DAC M&C command. When a command is sent to the DAC via device execute, the appliance pulls the running configuration of the DAC. The command then executes and the running configuration is pulled and saved to archive as the current configuration. If the device execute command echoes back a response, it is displayed in the command line. In the example below the response from the Sea Tel is: L1511 @g

```
[admin@A101100391 (port1/3)]# device execute c1304
beginning pull of running-config
beginning pull of running-config
```

```
running-config saved to archive as current.
L1511 @g
```

DAC Remote Panel Access

The DAC Remote Panel (DacRemP) remote access feature allows the user to utilize Sea Tel's DacRemP program without physical access to the Sea Tel DAC. Use of this feature requires DacRemP software version 1.01 or later. There are two methods to utilize the appliance to populate the data required in DacRemP: Asynchronous modem connection and serial port forwarding. For both methods described, the workstation's TCP/IP loopback (127.0.0.1) interface is utilized. An available local port is presented and configured in DacRemP. The Asynchronous modem connection method is best used in deployments with an Uplogix Control Center whereas the serial port forwarding method requires no Control Center.

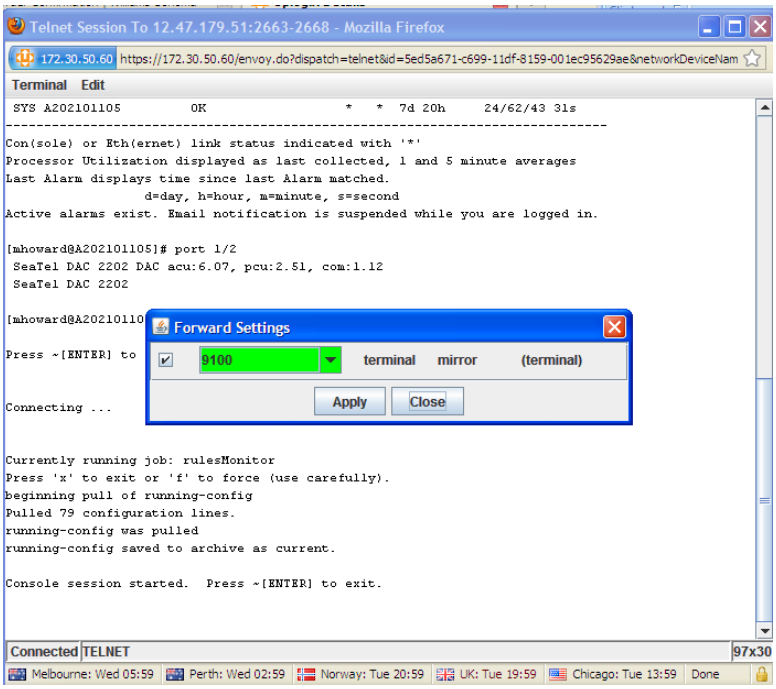
Asynchronous Modem Connection

In the asynchronous modem connection method, the Control Center's CLI applet is utilized to forward a terminal session with the Sea Tel DAC to DacRemP. Once properly authenticated into the Uplogix appliance, the dashboard will display. Navigate to the port in with Sea Tel configured using the **port** command.

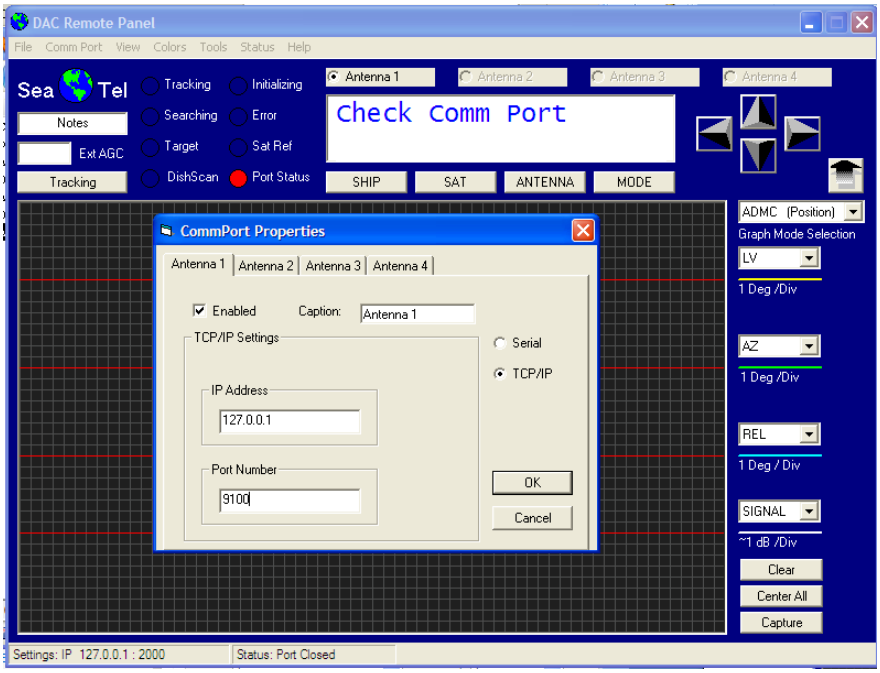
Then enter into a terminal session with the **terminal** command as shown in the example below:

```
[admin@A202101105]# port 1/2
SeaTel DAC 2202 DAC acu:6.07, pcu:2.51, com:1.12
SeaTel DAC 2202

[admin@A202101105 (port1/2)] terminal

Press ~[ENTER] to exit.

Connecting ...

Currently running job: rulesMonitor
Press 'x' to exit or 'f' to force (use carefully).
beginning pull of running-config
Pulled 79 configuration lines.
running-config was pulled
running-config saved to archive as current.

Console session started. Press ~[ENTER] to exit.
```

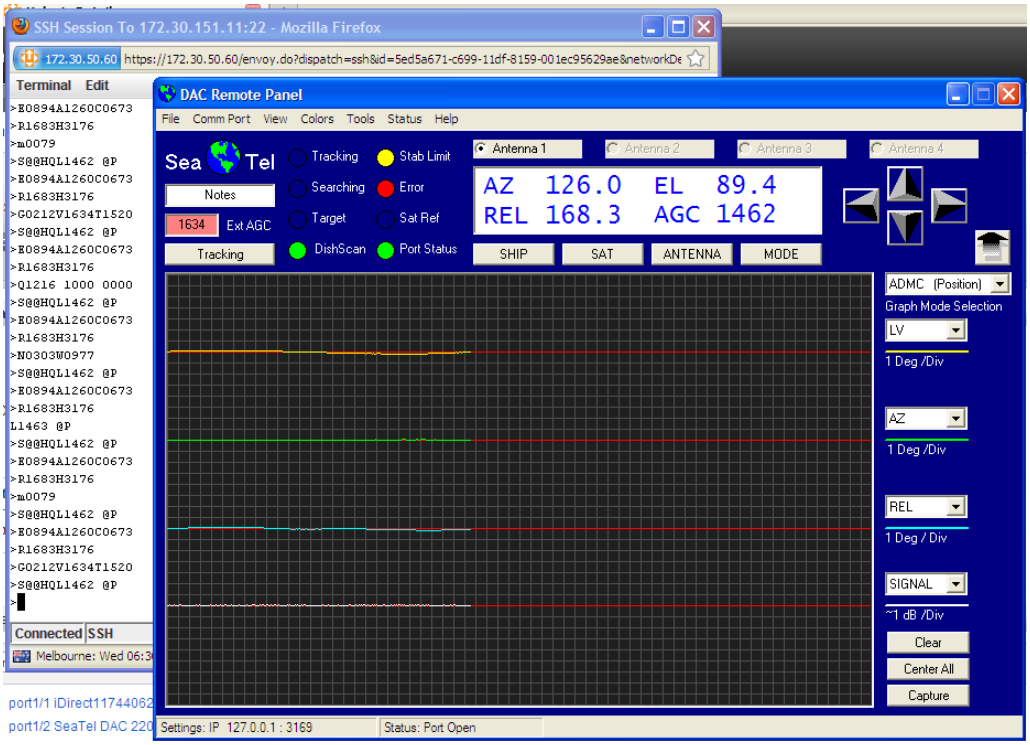
Once the terminal session has started, initiate a forward to DacRemP. On the Terminal menu of the CLI applet select Forward. An open port is selected at random or the user may select an open port. The green colored background of the port number indicates the port is available. A red colored background indicates the port is not available and another port should be selected. Once the port is selected click the Apply button.



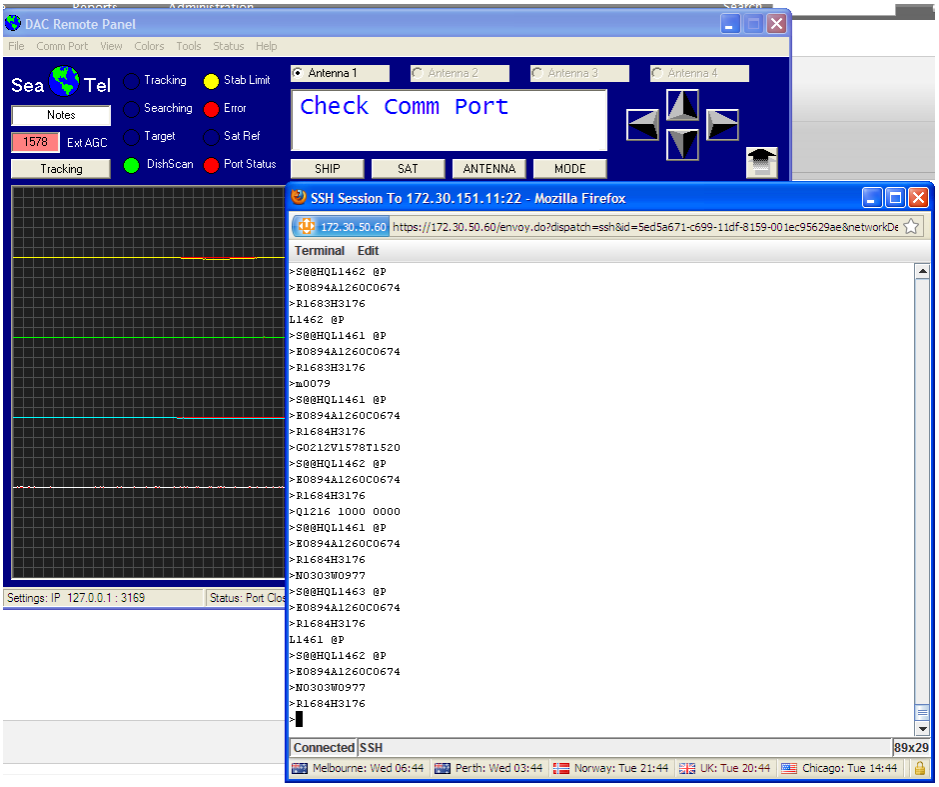
Next, launch the DacRemP software. On the CommPort menu select Properties. Set the IP Address to localhost (127.0.0.1) and enter the Port Number configured in the previous step. In this example the port number is 9100.



As DacRemP queries the DAC, the commands are displayed and logged in the terminal session window. As long as DacRemP is functioning, the port will not time out.



If you would like to interact with the terminal session directly, simply close the port by clicking on the Port Status radio button in DacRemP. The radio button will change from green to red. You can then enter DAC command codes directly in the terminal session window.



To reopen the port click on the Port Status radio button again and the connection will be re-established.

Serial Port Forwarding

The serial port forwarding method is useful for deployments with no Control Center. Follow the instructions in the *Feature Guide - Serial Port Forwarding* available on the Uplogix support website (www.uplogix.com/support) to set up forwarding using PuTTY.

Authenticate into the appliance with the appropriate user name and password. Navigate to the port with the Sea Tel DAC using the **port** command and enter the **terminal** command with the **forward** option:

```
[admin@A202101105]# port 1/2
SeaTel DAC 2202 DAC acu:6.07, pcu:2.51, com:1.12
SeaTel DAC 2202

[admin@A202101105 (port1/2)]# terminal forward

Press ~[ENTER] to exit.

Connecting ...

beginning pull of running-config
Pulled 79 configuration lines.
running-config was pulled
running-config saved to archive as current.

Console session started. Press ~[ENTER] to exit.
```

Now all interaction with the DAC M&C port is being forward to the workstation's localhost address (127.0.0.1). Next, launch the DacRemP software. On the CommPort menu select Properties. Set the IP Address to localhost (127.0.0.1) and enter the Port Number configured in during port forwarding setup.

As DacRemP queries the DAC, the commands are displayed and logged in the terminal session window. As long as DacRemP is functioning, the port will not time out. If you would like to interact with the terminal session directly, simply close the port by clicking on the Port Status radio button in DacRemP. The radio button will change from green to red. You can then enter DAC command codes directly in the terminal session window.

Appendix A: Driver Command Codes

The Uplogix Sea Tel driver utilizes DAC command codes to collect information for monitors and device configuration. Below are the commands the appliance utilizes to query the DAC and PCU.

Sea Tel Configuration

For DACs with a CommIF module with software version 1.11 or later, the configuration is pulled using the [?ACP command. For DACs with earlier versions of CommIF software or no CommIF module, the configuration is pulled using m commands:

Parameter	Command Code
El Trim	mA, mB
Az Trim	mC, mD
Auto Threshold	mF
El Step Size	mG
Az Step Size	mH
Step Integral	mI
Search Inc	mJ
Search Limit	mK
Search Delay	mL
Sweep Increment	mM
System Type	mN
Gyro Type	mO
Polang Type	mP
24v Polang Offset	mQ
24v Polang Scale	mR
AZ Limit 1	mS, mT
AZ Limit 2	mU, mV
Polang Tx Type	mW
AZ Limit3	mY, mZ
AZ Limit4	m[, m\
AZ Limit5	m], m^
AZ Limit6	m_, m`
Lat	mb, mc
Lat ns	md
Lon	me, mf
Lon ew	mg
SAT	mh, mi
Sat ew	mj

Hdg	mk, ml
R Hdg	mm, mn
THRS	mo, mp
Freq / MHz	mq, mr
Baud / KHz	ms, mt
FEC Tone Volt	mu
POL SEL	mv
AGC	mw, mx
Ext AGC/Modem	my, mz
Remote POL	m{, m|
Target NID	m}, m~
KuDisp	m€
TDisp	m␣
AZ Limit7 / Pol5 Offset	m,, m*f*
AZ Limit8	m„, m…
EL Limit12	m†
EL Limit34	m‡
EL Limit56	mˆ
EL Limit78	m‰
SatSkew	mŠ
IP Address	[I
Netmask	[N
Gateway	[G
TCP-0 Port On Off	[0
TCP-1 Port On Off	[1
TCP-2 Port (Open AMIP) On Off	[2
UDP Port On Off	[U
M&C Baud Rate On Off	[C
NMEA A Baud Rate On Off	[A
NMEA B Baud Rate On Off	[B
LO Band 1	[D1
LO Band 2	[D2
LO Band 3	[D3
LO Band 4	[D4
NMEA Heading ID	[H
Web (HTTP) On Off	[T
Enabled Mask	[O
Secured Mask	[Q

Pedestal Type	n0
CL Loop Gain	n1
LV Loop Gain	n2
AZ Loop Gain	n3
CL Tilt Trim	n4
LV Tilt Trim	n5
Home Flag Trim	n6
DishScan Setup	n7
Scan Rate	n8
Error Flags	n9
System ID	nA

Sea Tel Remote State Monitor

Parameter	Command Code
Heading	H
Azimuth	P
Relative Azimuth	H
Elevation	P
Cross Level	P
AGC	%
AGC Threshold	u
Polarity Angle	u

Sea Tel GPS Monitor

Parameter	Command Code
Latitude	?@
Longitude	?@
Cross Level	P
Heading	H
Elevation	P
# of Satellites	?@

Receiving technical support

The Uplogix technical support website allows you to open support requests, browse the knowledge base and download software updates. You must have a user account to view this site.

To create an account, send an email to support@uplogix.com with the subject line **create account**. Include this information:

- Organization name
- Account user's email address
- User's general contact information

You may request up to 10 accounts.

If you need to contact Uplogix customer support, please provide this information:

- Product model
- Serial number and software version (use the show version command from the RMOS command line)

Phone: 512-857-7070
Phone: 888-663-6869 (toll-free)
Fax: 512-857-7002
Email: support@uplogix.com
URL: www.uplogix.com/support

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