ENDEC Firmware version 6.1 Update

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1. ENDEC Firmware version 6.1 Update

Several new commands and features have been added since version 5.88. These are summarized in this section, and discussed in detail in the following sections.

> **Important Note**: this revision of the ENDEC requires versions 1.7 or greater of the ENDEC PRO and ENDEC DJ software packages. Users of ENDEC PRO or ENDEC DJ should contact their original source of ENDEC DJ or PRO for upgrade information. If you use ENDEC DJ or PRO, upgrade them first before using an ENDEC with version 6.1.
>
> **Important Note**: this version of the ENDEC firmware requires version 2.0 of the ENDECSET program. Do not attempt to use an older version.
>
> **Important Note**: this version of the ENDEC firmware is not compatible with the EPROG program. EPROG has been replaced with ENDECSET, which is available for download from the Harris support web site
>
> http://www.broadcast.harris.com/radio/sage/
>
> Do not use old versions of EPROG to edit settings files obtained from ENDECs using version 6.1 or greater, as the filters will be corrupted due to differing assumptions about the number of events and locations in the ROM.

1.1 New Features and Improvements

- All of the new items specified by the April 2002 FCC Report and Order are included in this release. This includes the new event codes (including the AMBER alert), new subdivision names, and the new marine location FIPS codes. The 400+ marine codes from the NWS that were current in May 2004 are included.
- The ENDECSET program provides a Windows GUI interface for configuring the ENDEC.
- Two-tone alert signal and NWS 1050 Hz signal detection is improved. Momentary dropouts caused by noise or switching would occasionally result in the tone being included in the ENDEC's stored audio buffer in previous versions.
- Random Weekly Test feature. The ENDEC can now store dates for weekly tests for the next 52 weeks. The dates/times are chosen randomly, but can be modified by the user. When this mode is enabled via **MENU.TIMED RWT.ENABLE TIMED RWT.RAND**, a weekly test will automatically be sent at the specified time. An RWT will be cancelled if a monthly test was previously sent in the same week, as allowed by Part 11.
- The ENDEC now supports access via a telephone modem. Access to the ENDEC via the modem requires ENDEC DJ, ENDEC Pro, or ENDEC Logger. The "lite" version of the software allows retrieval of the alert log from a single ENDEC, the full version allows automatic retrieval of logs from many ENDECs as well as complete control of all ENDEC functions, including a software remote front panel, upload/download of all ENDEC settings, and time of day updates. A new password feature has been added for modem access.
- New config options have been added, **MENU.CONFIG.PRO READ ONLY** restricts pro/dj users from controlling the ENDEC remotely, **MENU.CONFIG.PRO EXTRA STAT** sends advanced logging information for the new log capture program.
- Two new device types are supported, the STAR8 character generator, and the Statmon RECON remote monitoring tool.

The following minor changes have also been made. These are not discussed further.

- The crawl message for voluntary alerts in the MegaHertz mode for the VDS-MC device has been changed to:
  "<complete eas message> .Tune to channel xx for the audio portion of this emergency message".
- The MegaHertz SmartSwitch device is now supported on all ENDEC COM ports (it was previously only on 9600 baud ports).
- The number of alerts that can be logged in memory (**MENU.ALERTS.VIEW ALERT LOG**) was increased from 47 to 88.

1.2 New Events

This version of the ENDEC firmware includes all of the FCC 2002 Report and Order event codes. If you have previously added these alerts manually, you don't need to remove them. Here is the complete list of events:

EAN	an Emergency Action Notification	Una Notificacion de Actos de Emergencia
EAT	an Emergency Action Termination	Una Cancelacion de Actos de Emergencia
NIC	a National Information Center	Centro de Informacion Nacional
NPT	a National Periodic Test	Una Prueba Periodica Nacional
RMT	a Required Monthly Test	Una Prueba Requerida Mensualmente
RWT	a Required Weekly Test	Una Prueba Requerida Semanalmente

TOA	a Tornado Watch	Una Alerta de Tornado
TOR	a Tornado Warning	Una Advertencia de Tornado
SVA	a Severe Thunderstorm Watch	Una Alerta de Tormenta Severa acompanado con truenos
SVR	a Severe Thunderstorm Warning	Una Advertencia de Tormenta Severa acompanado con truenos
SVS	a Severe Weather Statement	Un Informe Meteorologico de Condiciones Severas
SPS	a Special Weather Statement	Un Informe Meteorologico Especial
FFA	a Flash Flood Watch	Una Alerta de Inundacion Repentina
FFW	a Flash Flood Warning	Una Advertenica de Inundacion Repentina
FFS	a Flash Flood Statement	Un Informe de Inundacion Repentina
FLA	a Flood Watch	Una Alerta de Inundaciones
FLW	a Flood Warning	Una Advertencia de Inundaciones
FLS	a Flood Statement	Un Informe de Inundaciones
WSA	a Winter Storm Watch	Una Alerta de Tormenta Invernal
WSW	a Winter Storm Warning	Una Advertencia de Tormenta Invernal
BZW	a Blizzard Warning	Una Advertencia de Vientos Huracanados con Nevada
HWA	a High Wind Watch	Una Alerta de Vientos Fuertes
HWW	a High Wind Warning	Una Advertencia de Vientos Fuertes
HUA	a Hurricane Watch	Una Alerta de Huracan
HUW	a Hurricane Warning	Una Advertencia de Huracan
HLS	a Hurricane Statement	Un Informe de Huracan
TSA	a Tsunami Watch	Una Alerta de Maremoto
TSW	a Tsunami Warning	Una Advertencia de Maremoto
EVI	an Immediate Evacuation	Una Evacuacion Inmediata
CEM	a Civil Emergency Message	Un Mensaje de Emergencia Civil
DMO	a Practice/Demo Warning	Una Advertenica de Practica/Demonstracion
ADR	an Administrative Message	Un Mensaje Administrativo
AVW	an Avalanche Warning	una Advertencia de Avalancha
AVA	an Avalanche Watch	una Vigila de Avalancha
CAE	a Child Abduction Emergency	una Emergencia de Secuestro de Nino
CDW	a Civil Danger Warning	una Advertencia de Peligro Civil
CFA	a Coastal Flood Watch	un Vigila de Inundacion el la Costa
CFW	a Coastal Flood Warning	una Advertencia de Inundacion en la Costa
DSW	a Dust Storm Warning	Advertencia de tempestad de polvo
EQW	an Earthquake Warning	una Advertencia de Terremoto
FRW	a Fire Warning	una Advertencia de Fuego
HMW	a Hazardous Materials Warning	un Advertencia de Materiales Peligrosos
LEW	a Law Enforcement Warning	una Advertencia de Ejecucion de la Ley
LAE	a Local Area Emergency	una Emergencia en el Area Local
NMN	a Network Message Notification	una Notificacion de Mensaje en la red electronica
NUW	a Nuclear Power Plant Warning	un Advertencia en la Planta Nuclear
RHW	a Radiological Hazard Warning	una Advertencia de Peligro Radiologico
SPW	a Shelter in Place Warning	una Advertencia de Lugar de Refugios
SMW	a Special Marine Warning	un Advertencia Especial Marina
TOE	a 911 Telephone Outage Emergency	un 911 Emergencia de Falla Telefonica
TRA	a Tropical Storm Watch	una Vigila de Tormenta Tropical
TRW	a Tropical Storm Warning	una Advertencia de Tromenta Tropical
VOW	a Volcano Warning	un Advertencia Volcanica

If the provided Spanish translation is not suitable for your area, you can use the ENDECSET program to specify a “new” alert with the event code of the alert you want to replace. Enter both the English and the Spanish text.

1.3 New Location Codes

The following new "state" codes have been added:

57, Eastern N. Pacific
58, N. Pacific Near AK
59, Central Pacific
61, S. Central Pacific
65, Western Pacific
73, NW N. Atlantic
75, West N. Atlantic
77, Gulf Of Mexico
91, Lake Superior
92, Lake Michigan
93, Lake Huron
94, Lake St. Clair
96, Lake Erie
97, Lake Ontario
98, St. Lawrence River

In addition, all of the "counties" defined by the NWS as of May 2004 (including codes scheduled to be placed in service in July 2004) are included. Some of the names are very long, for example,

> "Atlantic waters, beyond the 100 fathom line E of mouth of Rio Guajataca, S of 19.5N and between 64N and 68W, including the nearshore waters inside of 100 fathom line of the NW coast of Puerto Rico, from Punta Cadena to mouth of Rio Guajataca."

To avoid buffer overflows on the ENDEC, as well as on equipment attached to the ENDEC, a limit of 1000 characters (2000 if both English and Spanish are used) is set. If the length of the decoded alert string exceeds this limit, the numeric FIPS code is used instead of the complete name. For example, most alerts will appear as

> "The National Weather Service has issued a Tsunami Warning for Caribbean waters of the south coast from Punta Viento to Punta Melones, and outside of 12nm of west coast from Punta Melones to Punta Cadena, east of 68W and N of 17N, Charleston Harbor, Coastal waters from Altamaha Sound to Fernandina Beach, FL out 20 nm, Coastal waters from Cape Fear, NC to Little River Inlet, SC out 20 nm, Coastal waters from Cape Hatteras to Ocracoke Inlet, NC out 20 nm, Coastal waters from Cape Lookout to Surf City, NC out 20 nm, Coastal waters from Currituck Beach Light to Oregon Inlet, NC out 20 nm, Coastal waters from Edisto Beach, SC to Savannah, GA out 20 nm, Coastal waters from Fernandina Beach to St. Augustine, FL out 20 nm, Coastal waters from Little River Inlet to Murrells Inlet, SC out 20 nm, Coastal waters from Murrells Inlet to South Santee River, SC out 20 nm, and Athens, OH beginning at 7:59 pm and ending at 8:59 pm (SAGEREC)"

Very long alerts will appear as :

> "The National Weather Service has issued a Tsunami Warning for (75740) in West N. Atlantic, (75330) in West N. Atlantic, (75450) in West N. Atlantic, (75252) in West N. Atlantic, (75154) in West N. Atlantic, (75158) in West N. Atlantic, (75150) in West N. Atlantic, (75352) in West N. Atlantic, (75452) in West N. Atlantic, (75254) in West N. Atlantic, (75256) in West N. Atlantic, Athens, OH, and Belmont, OH beginning at 7:59 pm and ending at 8:59 pm (SAGEREC)"

The size of the buffer was selected so that the longest combination of non-Marine alerts will always fit. Only a large number of the longest marine codes will be abbreviated as above.

1.4 New Sub Divisions

The FCC renamed the FIPS sub divisions in the 2002 report and order. They are now:

1, Northwest
2, North
3, Northeast
4, West
5, Central
6, East
7, Southwest
8, South
9, Southeast

1.5 Random Required Weekly Test feature

The ENDEC previously included a "Timed RWT" feature that allowed you to specify a time and day of the week to send a required weekly test (RWT). This was intended to allow you to set up a weekly test one week in advance, but did require weekly interaction with the ENDEC.

The new "Random RWT" feature allows a different time for each of the 52 weeks in a year. The ENDEC will fill the table with random times when the feature is enabled, or when **MENU.TIMED RWT.RESET RWT RAND** is used. The day, hour, and minute are settable, seconds are always 0.

You can print all of the times to the internal printer or external serial printer by using **MENU.TIMED RWT.PRINT RWT RAND**. You can view and edit each time by using **MENU.TIMED RWT.EDIT RWT RAND.** The ENDECSET program provides a more convenient way to edit the times.

To enable the random weekly feature, do the following:

1) Enable random weekly test by selecting **MENU.TIMED RWT.ENABLE TIMED RWT.RAND.** If you have not previously enabled random weekly tests, a table of times will be built for you. If the random time for the current week is earlier than one hour from the current time, the alert will be marked as already sent. If you want an alert soon, you will need to edit the current week's time.

2) View the times by printing them with **MENU.TIMED RWT.PRINT RWT RAND,** or step through the times using **MENU.TIMED RWT.EDIT RWT RAND.**

3) Edit the times as required by local agreements or common sense (avoid Super Bowl Sunday, perhaps). Note on editing: as protection against software or hardware problems that might "hang" the ENDEC software, the ENDEC uses a command timeout. When not sending an alert, if the ENDEC does not return to the "idle state", (the top menu level) within 10 minutes, the ENDEC will reboot. You must leave the edit menu and return to the top menu level (where "MENU WEEK" is displayed) once each 10 minutes, or the ENDEC will restart, and you will lose the changes you have made.

There are several reasons why you might not see an alert when you expected to, and several protections against an alert occurring unexpectedly. A random RWT will not be sent:

1) if random RWT is not enabled.

2) within 60 seconds of a time change. This allows you to change all parts of the time (year/month/day/hour/min/sec) and correct mistakes.

3) within one hour of the sending of an RWT by any other means. This keeps software errors, hardware errors, or user errors from placing the ENDEC into a mode where it will continually send RWTs (for example, a bad override input with override set to generate weekly tests). For example, if you set the random RWT to occur soon, have it send, then reset the RWT time to again occur soon, the second alert

will not be sent. In some cases, the ENDEC can detect that you are trying to setup to send too quickly and will display a error. You can reset this one hour check by using **MENU.TIMED RWT.RWT RESET.**

4) if another alert is pending.

5) if a monthly test was already sent in the same week. A week starts at midnight Sunday local standard time. For daylight savings time months, the week starts at 1:00am Sunday. If an RMT is sent after the start of the week, but before a schedule RWT, it cancels the random RWT for that week.

The random required weekly test commands are detailed below.

1.6 Modem Access

The ENDEC now supports access via modem. The ENDEC DJ Lite program allows you to retrieve the alert log, get and put the ENDECs parameter settings file, and set the time of day, for a single ENDEC. The ENDEC DJ program allows full remote control of the ENDEC, including remote access to the front panel commands, sending or forwarding alerts, and automatic log retrieval for any number of ENDECs.

You will need two modems, of course, one on the ENDEC side, and one on the computer running ENDEC DJ. The ENDEC supports a Hayes Accura 56k compatible modem. Similar modems should also work, though be sure to use a modem with an internal processor. Do not use a "win modem" for the ENDEC, as this type of modem depends on a PC to perform most of the modem's functions.

You may use any "AT" command set modem on the PC side.

To enable the use of the modem, assign a modem "device" to one of the ENDEC's comm ports. See the ENDEC Manual, **MENU.DEVICES** command. Use the "modem" device. You will also need to assign a password for modem use, see the description of the **MENU.CHANGE PRO PASS** command below.

Be aware that the ENDEC can provide accessory power on pin 9 (see the ENDEC Manual, "Accessory Power" in the "Connector Descriptions" chapter. Do not use a cable with pin 9 connected when interfacing the ENDEC to a modem.

It is beyond the scope of this document to provide details on connecting specific types of modems to the ENDEC. The following general comments apply.

The ENDEC uses this initialization string: ATV1&D0S0=0&K0. The ENDEC will answer the modem on the first ring, do not attempt to share a phone line with another device or voice user.

The ENDEC expects only a "three wire" interface – RxD, TxD, and ground. Some modems will want to see DTR. If your modem does not have an "ignore DTR" switch, you will need to build a connector that loops the modem's DSR to its DTR.

The ENDEC's "COM3" port (and only the COM3 port) can provide a DTR signal on pin 4.

Further information is provided in the ENDEC DJ documentation.

1.7 New Commands

1.7.1 MENU.CONFIG.OLD SCAN METHOD

Version 6.1 improves the method the ENDEC uses to scan the monitor in audio channels for alerts. This command can be used to revert to the old method by selecting YES. The default NO should be used unless otherwise instructed by ENDEC technical support.

1.7.2 MENU.CONFIG.PRO READ ONLY

If set to YES, this option disallows input from the ENDEC PRO device. The result is that ENDEC Pro, ENDEC DJ, and ENDEC Logger will receive status information only, but can not be used to remotely control the ENDEC. This adds an additional layer of protection when accessing the ENDEC via a LAN.

1.7.3 MENU.CONFIG.PRO EXTRA STAT

When set to YES, enables sending of additional status information for use by the ENDEC Logger program.

1.7.4 MENU.CHANGE PRO PASS

This command changes the current password used for access by the ENDEC PRO and ENDEC DJ software programs. This affects both the "PRO" device and the "MODEM" device.

It is not possible to display the current password. Each time the **MENU.CHANGE PRO PASS** command is used, the password is randomized. You can modify the password using the softkeys.

```
07/01/02 11:06:25
Pro Pass:=WoaZwE3h

Done curs  up  down
```

Use the **curs** key to move the edit cursor – the underline shows which character is being edited. Use the **up** and **down** keys to change the character. Upper and lower case can be used as well as digits and special characters. The password must be 8 characters long.

This password and the ENDEC DJ or ENDEC PRO password for this ENDEC must match exactly. In versions of ENDEC DJ/PRO that support multiple ENDECs, a password for each ENDEC must be entered.

As always, password security is up to the user. Select a non-obvious password (not your company name), use upper and lower case and at least one special character. The space and backslash "\" characters can not be used.

1.7.5 MENU.TIMED RWT.EDIT RWT RAND

This command allows you to edit each week's time. The display shows:

```
07/01/02 10:35:12
Week Starts 07/07/02
RWT at 07/09 10:12
Done Edit Next Prev
```

This shows the starting day for the week, and the date within that week that the alert is scheduled for. If the week is the current week, and the alert has already been sent (or has been cancelled by a preceding monthly test), an "S" will appear after the "RWT at" line.

Next will step through the following weeks, **Prev** will move backwards. **Edit** will allow a change to that weeks scheduled RWT with the following display:

```
07/01/02 10:35:21
Edit RWT Time
RWT at 07/09 10:12
Done Hour More Less
```

The **Done** softkey will exit the edit menu, storing any changes you have made.

The **Hour** key shows size of the step changed with each press of the more/less keys. When **Hour** is showing, **More** and **Less** adds or subtracts one hour on each press. Press the Hour key to select **Day**s or **Min**utes. For example, to change the alert from July 9 to July 10, press **More** 24 times to add 24 hours to the time, or press **Hour** until it reads **Day**, then press **More** once to advance the time by one day. You can press and hold the more/less keys to rapidly add/remove time.

1.7.6 MENU.TIMED RWT.PRINT RWT RAND

Print all 52 weekly RWT times to the internal printer (if enabled) or any external serial printers.

1.7.7 MENU.TIMED RWT.RESET RWT RAND

Assigns a new random time for each of the next 52 weeks. This may or may not generate a RWT for the current week – an alert will be generated only if the random time is more than one hour in the future.

1.8 ENDECSET program

The ENDECSET program can be used to

- Upload and download configuration settings from the ENDEC
- Set the ENDEC Time of day.
- Reboot the ENDEC
- Edit configuration files

ENDECSET provides access to each setting on the ENDEC, including incoming and outgoing filters and headers, custom event and location names, the RWT schedule, etc.

ENDECSET includes item by item help, accessed with the tool.

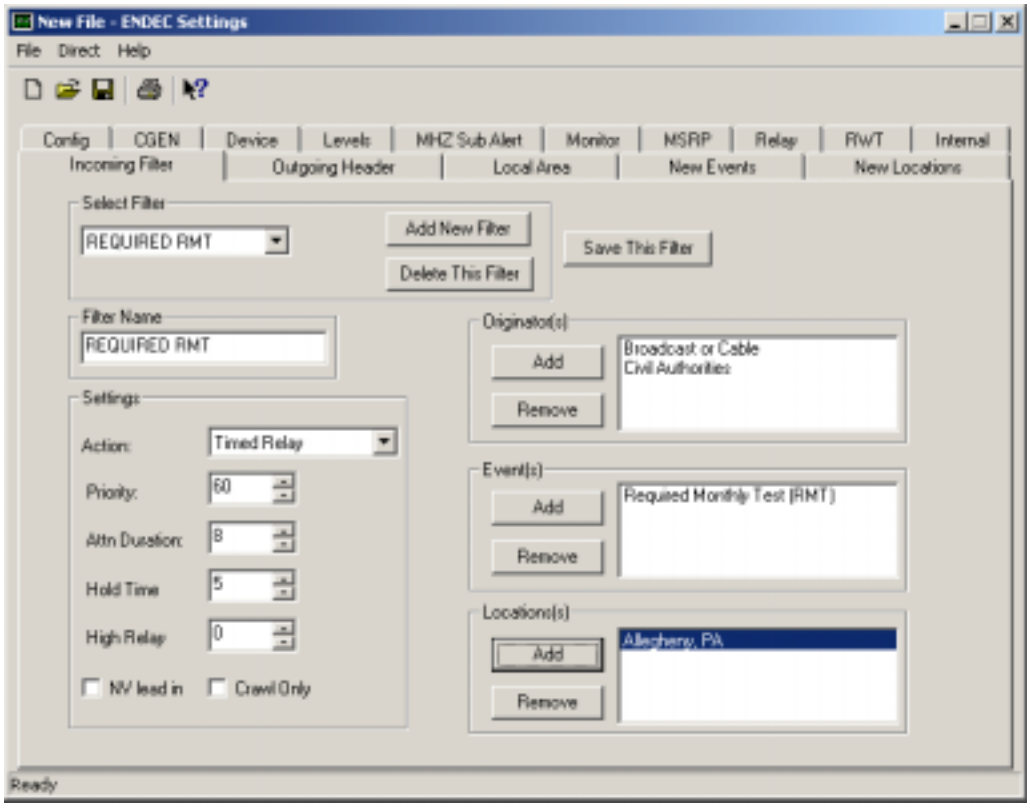
ENDECSET can be called with a command line option to set the ENDEC time, which can keep the ENDEC synced to your station clock.

To use the ENDECSET program, set one of the ENDEC serial ports to the ENDECSET device. Connect a "null modem" serial cable (one that reverses pins 2 and 3) between a serial port on the PC and the selected com port on the ENDEC. If your PC does not have a serial port, you'll need to purchase a USB to serial connector from your local electronics emporium, and connect the null modem cable to that. Use the ENDECSET Direct/Settings menu to select the PC's comm. Port and baud rate. The ENDEC's computer, com2, com3, and com6 are usually 9600 baud, com4 and com5 are 1200 baud.

Using the ENDECSET Direct/Get Settings from ENDEC menu, save the settings from your ENDEC into a file. Edit the settings as required.

Using the ENDECSET Direct/Put This Settings File to ENDEC menu, send the editing settings to the ENDEC.

Finally, use the ENDECSET Direct/Reboot ENDEC menu to restart the ENDEC.



Sample ENDEC Set screen.

2. Menu Trees

The ENDEC menu structure is shown below, in the order that it appears on the ENDEC display. Use it to help find settings. The last column shows the ENDECSET settings tab that the option appears on.

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
Alerts				N/A
	Originate Alert			N/A
	Relay CCC Alert			N/A
	Send Pending			N/A
	Record Audio			N/A
	Preview Audio			N/A
	Record NVAudio			N/A
	Preview NVAudio			N/A
	View Alert Log			N/A
	Clear LED Sign			N/A
	Clear Alert Log			N/A
Printer Feed				N/A
Practice				N/A
Mode				Config
Presets				
	Incoming			Incoming Filter
	Outgoing			Outgoing Header
	Local Area			Local Area
Config				
	ATTN Duration			Config
	Auto Start			Config
		None		Config
		Hour		Config
		Min		Config
	Auto Stop			Config
		None		Config
		Hour		Config
		Min		Config
	Call Sign			Config
	Codi Mode			CGEN
	Codi Crawl Speed			CGEN
	Crawl Reps			CGEN
	Crawl RWT			CGEN
	Default Duration			Config
	Default REC			Config
	Language			CGEN
	LED Sign Mode			Config
	LED Sign Sound			Config
	LED Sign Time			Config
	Menu Timeout			Config
	Mode			Config
	NWS Hunt Time			Config
	NWS Practice			Config
	NWS Select			Monitor
	NV Audio Len			MHz Sub Alert
	NV Lead-in			MHz Sub Alert
	Old Scan Method			Config

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
	Originator			Config
	Printer			Config
	Print All Alerts			Config
	Print ZCZC			Config
	Pro Extra Stat			Config
	Pro Read Only			Config
	Processor Lead			Config
	Scan Select			Monitor
	Status on Console			*Obsolete*
	Strict Time			Config
	VDS Relay On			CGEN
	Unknown FIPS			Config
	Allow Build EAN			N/A
Relay				Relay
MSRP				MSRP
	Station 1			MSRP
		Mode		MSRP
		Call Sign		MSRP
		Enable		MSRP
	Station 2			MSRP
		Mode		MSRP
		Call Sign		MSRP
		Enable		MSRP
	Station 3			MSRP
		Mode		MSRP
		Call Sign		MSRP
		Enable		MSRP
	Station 4			MSRP
		Mode		MSRP
		Call Sign		MSRP
		Enable		MSRP
	Assign MSRP relay			MSRP
Override Use				Config
	None			Config
	Send RWT			Config
	Hold off			Config
	Hold off night			Config
	Active Polarity			Config
Devices				Device
	Show			Device
	Computer			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device
			Console	Device
			ENDECSET	Device
			Relay	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			VDS-MCSA	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device
		Baud Rate		Device
		Station Number		Device
	COM2			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device
			LED Sign	Device
			Console	Device
			ENDECSET	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			VDS-MCSA	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device
		Station Number		Device
	COM3			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device
			Console	Device
			ENDECSET	Device
			Relay	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			VDS-MCSA	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
		Baud Rate		Device
		Station Number		Device
	COM4			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device
			LED Sign	Device
			Console	Device
			ENDECSET	Device
			Relay	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device
		Station Number		Device
	COM5			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device
			LED Sign	Device
			Console	Device
			ENDECSET	Device
			Relay	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device
		Station Number		Device
	COM6			Device
		Device Type		Device
			NONE	Device
			Hand Control	Device
			VDS CGEN	Device
			CODI CGEN	Device
			GENERIC CGEN	Device

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
			LED Sign	Device
			Console	Device
			ENDECSET	Device
			ENDEC PRO	Device
			Serial Printer	Device
			Decoder	Device
			Encoder	Device
			News Feed	Device
			VDS-MC	Device
			VDS-MCSA	Device
			Modem	Device
			SmartSwitch	Device
			STAR-8	Device
			Recon	Device
		Station Number		Device
Monitor Source				Monitor
	Alerts			Monitor
	None			Monitor
	ENC AUD IN			Monitor
	MON 1 IN			Monitor
	MON 2 IN			Monitor
	MON 3 IN			Monitor
	MON 4 IN			Monitor
	MON 5 IN			Monitor
	MON 6 IN			Monitor
	MIC IN			Monitor
	Playback			Monitor
	Attn Tone			Monitor
	Attn Tone Low			Monitor
	Attn Tone High			Monitor
	Data Tone			Monitor
	Data Tone Low			Monitor
	Data Tone High			Monitor
Levels				Levels
	Speaker			Levels
	Line Out			Levels
	MIC			Levels
	Attn Tone			Levels
	Attn Low Tone			Levels
	Attn High Tone			Levels
	Data Tone			Levels
	Data Low Tone			Levels
	Data High Tone			Levels
	Record Mon 1			Levels
	Record Mon 2			Levels
	Playback			Levels
	ATTN Thresh			Levels
MHz Sub-Alert				MHz Sub-Alert
	MHz Enable			MHz Sub-Alert
	User Page			MHz Sub-Alert
	Tune to Chan			MHz Sub-Alert
	ATTN Duration			MHz Sub-Alert
	Repeats			MHz Sub-Alert

Highest Level	Lower Level	Lower Level	Lowest Level	ENDECSET Page
	Tune to Rep			MHz Sub-Alert
	RWT MODE			MHz Sub-Alert
	End Repeats Now			N/A
Date/Time				Direct/Set ENDEC Time
	UTC Offset			Config
	Daylight Enable			Config
	Year			Direct/Set ENDEC Time
	Month			Direct/Set ENDEC Time
	Day			Direct/Set ENDEC Time
	Hour			Direct/Set ENDEC Time
	Min			Direct/Set ENDEC Time
	Sec			Direct/Set ENDEC Time
Timed RWT				
	Enable Timed RWT			RWT
	Reset RWT Rand			N/A
	Edit RWT Rand			RWT
	Print RWT Rand			N/A
	RWT Reset			N/A
	RWT Day of Week			RWT
	RWT Hour			RWT
	RWT Minute			RWT
LCD Contrast				Levels
Change Password				Config
Change Admin				Config
Change Pro Pass				N/A
Test				
	Self Test			N/A
	Printer Test			N/A
	VDS CGEN Version			N/A
	Reset Blink Error			N/A
	Reboot			Direct/Reboot ENDEC