



E-Series and RDR OSMAC Narrow-Band Satellite Controller Frequency Reprogramming Kit, P/N 102-1208 and 102-1230 User's Guide

Introduction

The E-Series and RDR OSMAC narrow-band satellite frequency decoder module provides four preprogrammed frequencies, one of which is selected for use by the placement of a movable jumper located on the module board.

The decoder module utilizes a programmable frequency synthesizer which enables each of the preprogrammed frequencies to be changed as needed for the irrigation site conditions. The software and hardware components provided in this kit enable the frequency reprogramming task to be easily accomplished.

The Frequency Reprogramming Kit includes the following components:

- External 12 V a.c. power supply (120 V a.c. input for kit #102-1208 and 240 V a.c. input for kit #102-1230)
- Power supply interface adapter and 20-pin ribbon cable (for E-Series OSMAC power connection)
- Interface cable assembly (for RDR OSMAC power connection)
- DB-9 serial cable (for decoder module to PC connection)
- Two 3.5" floppy diskettes containing the Frequency Management Program software

Computer System Requirements

The Frequency Management Program, which occupies less than 5 megabytes of disc space, runs on a standard PC with enough internal memory to run applications under the Windows operating system. The PC must have at least one standard communications port capable of attaching to a device at 1200 baud.

Step 1: Remove the Decoder Module from the Satellite Controller

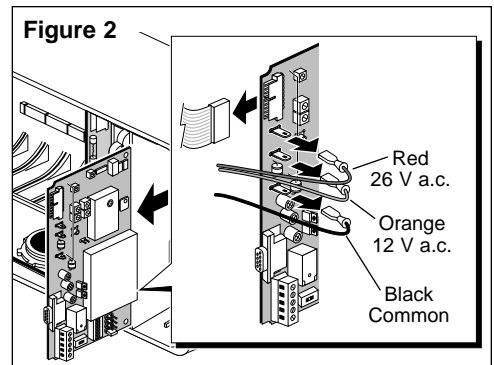
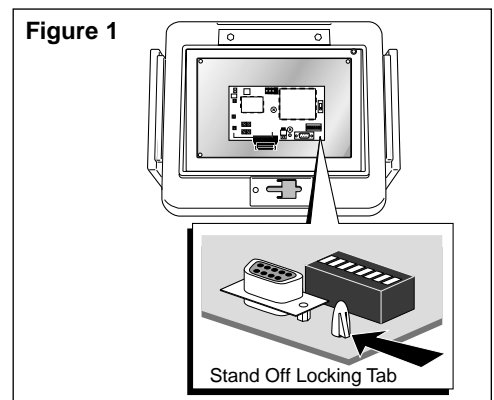
▲ Caution: Potential damage can occur to the satellite controller if the decoder module is not disconnected from the controller or RDR unit prior to performing the frequency reprogramming procedure.

For E-Series OSMAC satellite:

- Place the satellite controller power switch in the Off (O) position.
- Open the cabinet lid and remove the clear plastic cover from the decoder module assembly.
- Release the ribbon cable connector from the decoder module by moving the cable receptacle locking tabs outward.
- Carefully remove the decoder module from the controller by compressing the four standoff locking tabs (indicated in **Figure 1**) using needle nose pliers or a flat blade screwdriver. Carefully lift each corner of the module upward just enough to keep the standoff locking tab compressed. When all four standoffs are compressed, remove the module assembly from the controller.

For RDR OSMAC satellite:

- Locate the RDR decoder module and unplug the Black common wire to disconnect power to the module.
- Remove the Orange 12 V a.c. power wire, Red 26 V a.c. power wire and the flat ribbon cable. Remove any wires connected to the decoder module terminal block and note their position for proper reinstallation. See **Figure 2**.
- Carefully slide the decoder module out of the RDR unit.



Step 2: Install the Frequency Management Software

Note: The E-OSMAC decoder Frequency Management Program, written for use on a compatible PC running under the Windows -95, -98, or NT operating system, allows the user to view the current frequency settings in the E-Series or RDR OSMAC frequency decoder card and to change the settings to appropriate values. Data can be saved on computer disc files for later retrieval, and values can be edited in order to simplify the chores of modifying frequency selections.

(continued)

Software Installation Procedure (continued)

⚠ Important: As is the case during any program installation, it may be necessary to update some Windows files. There is always the possibility that some software in a system can be damaged in this process. It is recommended to save any of the PC's valuable data files on diskette or a network before installing the program.

- Insert Diskette 1 into the floppy drive. Use standard Windows procedures to start the installation. For example: Click on Start, then Run, then Browse to A:\SETUP.EXE. The install wizard should begin operation and will ask several questions during the installation process. It is recommended that the program be placed in a folder named EOSMACFQ. When all questions have been answered, the wizard will complete the installation.

Note: If the frequency reprogramming software was provided via email or some similar method, create a new folder on your C drive or network for storing the files temporarily, then save them in that folder. The files are named SETUP.EXE, SETUP.LST, and EOSMACFQ.CAB. Use standard Windows procedures to invoke SETUP.EXE.

- Windows may issue a message regarding updating some system files and restarting the computer. If this occurs, let the computer reboot. When that operation is complete, start SETUP again. The installation wizard should begin operation.
- In some cases, Windows may issue messages regarding files in use, then give an option to abort the operation or ignore the conflict. In such cases, choose IGNORE to continue installation.
- Windows may also issue warnings regarding files that are newer on the PC than in the installation suite. Generally, it is best to keep the newer file.

Step 3: Connect the Decoder Module to the Power Supply and Computer

For E-Series OSMAC satellite:

- Plug the power supply output cable into the interface adapter. Attach the 20-pin ribbon cable to the decoder module as shown in **Figure 3**. Make sure the ribbon cable is properly attached to the socket and the locking tabs are pushed inward.

For RDR OSMAC satellite:

- Connect the power supply to the interface cable as shown in **Figure 3**. Connect the Red lead to the decoder module 12VAC tab and the black lead to the COM tab.

For both satellite types:

- Connect the DB-9 serial cable to the decoder module 9-pin socket and the serial port of the PC.
- Plug the power supply cord into a wall outlet. The Red LED on the decoder module should illuminate to indicate that the circuit is On.
- Place the 3-position mode switch in the TEST position.

⚠ Important: The switch must be in the **TEST** position to enable frequency reprogramming. New frequencies will not be downloaded if the switch is in the **NORMAL** or **RESET** position.

Figure 3

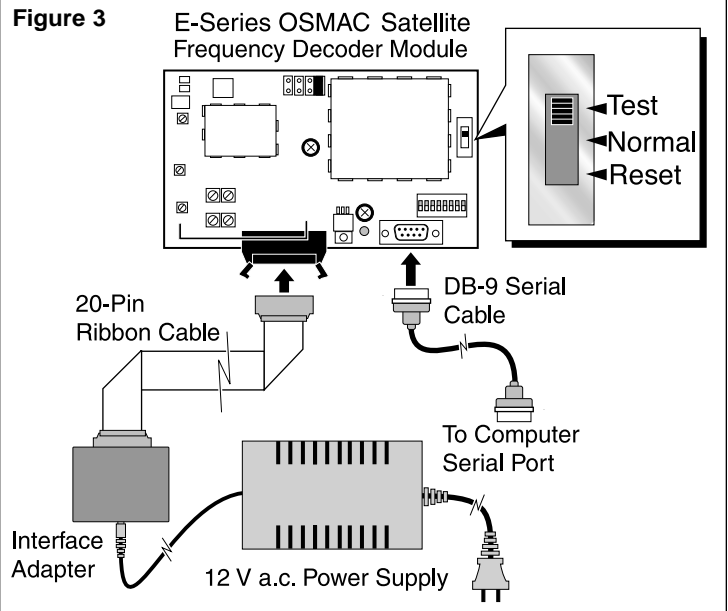
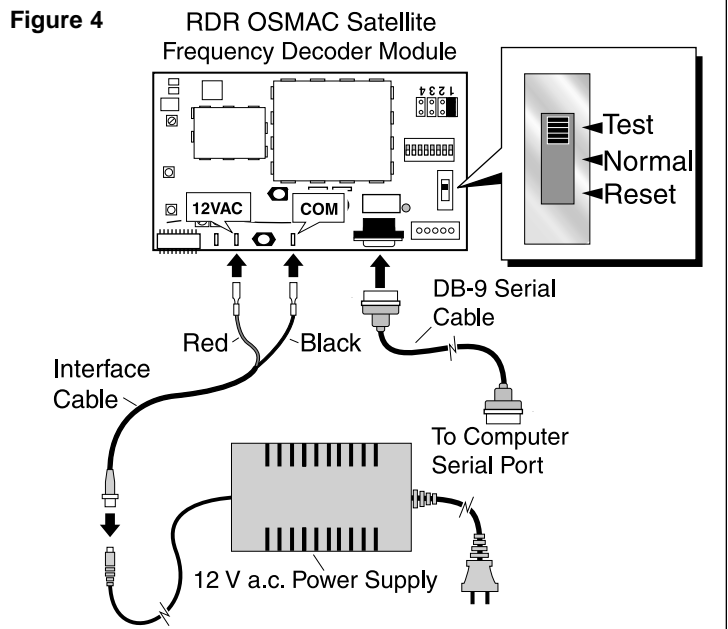


Figure 4



Step 4: Program Operation

Start the Frequency Management Program using standard Windows procedures. For example, click on START and PROGRAMS then select the frequency manager from the list of programs. The program operates through the main form on the computer screen as shown in **Figure 5**. (continued)



- ① The top line of the screen contains the program's title and the standard Windows screen options, allowing the user to minimize the screen, to make the screen smaller or larger, or to terminate the program.
- ② The next line on the screen is a menu bar. The items marked FILE, EDIT and COMM PORT can be used to select files and save data, to edit frequencies, and to select the COMM port to which a decoder card can be attached. Also on this line is the name of the file currently used to store frequency data.
- ③ This is a field containing current frequency data file description. This can be changed as desired, and it will be saved in the data file along with frequency data in order to provide some assistance in identifying the source or use of the data.
- ④ This is the "Current Frequencies" data column which contains the four values read from the card attached to the system. Normally, this data is obtained automatically whenever a decoder card is first attached to the system. Under this column is a button marked "Read Frequencies." Click on this button at any time to reread the frequencies from the card.
- ⑤ The column marked "Edit Frequencies" contains the four numbers read from the disc file which can be changed as needed to update the card. Only the entries in this column can be edited, saved to disc or restored from disc or downloaded to the decoder card. Under this column is a button marked "Download Frequencies." Click on this button at any time to send the frequencies to the decoder attached to the system.
- ⑥ Below the two command buttons is a field that indicates the decoder status. When a decoder is attached and communicating with the system, this field will have a green disc and display "Decoder is Attached." When no decoder is attached, or is not communicating, the field will show a red disc and display "No Decoder Attached."

Program Operation (continued)

- When the program begins operation, it attempts to read frequency and description data from the file that was accessed during the previous session, and display that information in the EDIT FREQUENCIES column of the main form. If that file cannot be found, the program will note that fact and display factory default frequencies on the form.
- The program next tries to read and display current frequency data from a decoder card. To be successful, there must be a decoder card attached, the card must have electrical power and its slide switch must be set to the TEST position. If these conditions are not met, the CURRENT FREQUENCIES fields will be left blank and the form will display a message that a decoder card is not attached.

Note: A decoder card may have invalid data in its frequency memory. When the program detects this, it will show the decoder card as attached, but display a message below the CURRENT FREQUENCIES column stating that the frequency data is bad. Normally, this is not a serious problem since it is only necessary to download valid data to the decoder card. If this condition persists, the decoder card may be defective.

This condition can also arise if a frequency data upload operation (which can take several seconds) is inadvertently interrupted. In this case, click on the READ FREQUENCIES button to reread frequency data.

- The program will automatically read frequency data each time a decoder card is replaced. If at any time you wish to reread the frequencies, click on the READ FREQUENCIES button.

Note: The computer attaches to a decoder card using one of its RS232-type communications ports. The COMM PORT menu on the form menu bar can be used to select the actual port to be used. Normally, the program saves the port selection in a configuration file. In case the program cannot find its configuration file on startup, it will use COMM 1. The selection can be changed any time during program operation.

Step 5: Editing Frequency Values

The four frequency values in the EDIT FREQUENCIES column and the FILE DESCRIPTION field can be changed as needed, and the four frequency values from the CURRENT FREQUENCIES column can be copied to the EDIT FREQUENCIES column as desired.

- Fields in the EDIT FREQUENCIES column of the form can be edited as desired, whether or not a decoder card is attached.
- Use the computer's mouse to move the screen cursor to the FILE DESCRIPTION field, then left-click on the mouse once. Change the description field as desired. When finished, click on any frequency field or on a menu bar item to exit that field.
- While a frequency field shows its normal white background color, it cannot be changed. To edit one of the values in the EDIT FREQUENCIES column, use the computer's mouse to move the cursor into the field to be changed, then left-click. The field's background color should change to gray and editing should be enabled. Use normal editing keys such as BACKSPACE and DELETE and numeral keys to navigate inside the field and to change numbers. Only numerals and the decimal point are allowed, and **the frequency value must be between 450.1000 and 470.1000**. If the program finds an unacceptable character in a field, or a frequency value that is out of range, it will "beep" using the computer's speaker, then restore the field to its previous contents. When editing within a field is complete, click on another field to edit there or click on the same field to reset the field to its normal background color and close editing on that field.

Note: The program stores the original contents of any EDIT FREQUENCY field that is changed, maintaining a "stack" of five prior values, in reverse order; that is, the last changed value is on the top of the stack. If an error in some changed value is detected, click on the EDIT menu button to pull that menu down. Click on the UNDO button to restore the last field changed. The UNDO button will be active only when there are items on the stack.

- The contents of any CURRENT FREQUENCY or EDIT FREQUENCY field can be copied to any one of the EDIT FREQUENCIES fields. Click on the field to be copied to activate it, then pull the EDIT menu down and select COPY. Click on the EDIT FREQUENCY field you wish to copy to, then select PASTE from the EDIT menu to complete the copy operation.
- When editing is complete, click on the DOWNLOAD FREQUENCIES button to send data to the attached decoder card. If there is no decoder card attached, clicking on this button will have no effect.

Note: The program does not save the frequency data automatically. To save frequency values to disk, refer to "Step 6: File Operations" on page 5 for detailed information.

- When a session is complete, click on the "X" in the upper right corner of the form, or select Exit from the File menu on the menu bar. The program will save the name of the frequency file being used for use in the next session, then terminate.

Step 6: File Operations

Saving a File:

Contents of the FILE DESCRIPTION and the EDIT FREQUENCIES fields data can be saved in files on the computer's hard disc or floppy drive, then recalled at a later time when needed.

- Save the contents of the edit fields in the selected file by pulling down the FILE menu and selecting SAVE.
- To create a new file for saving frequency data, pull down the FILE menu from the menu bar and select SAVE AS. Use the Windows dialog to create a new folder or file on the hard disc or diskette. The program will save values in the file, and keep the file name as the current selection. While this mechanism is intended primarily for building new frequency files, it can be used to overwrite the data in an existing file. If the file selected from the Windows dialog exists, the program will display a warning message to that effect. Select YES from the warning message box to use the existing file, or select NO or CANCEL to void the SAVE AS operation.

Opening a File:

- As described previously, the program will attempt to read the same disc file that had been used at the end of the previous session. If that file is not available, the program will display default frequency values and mark the fact that no file has been selected.
- To open a different existing frequency file, pull down the FILE menu from the menu bar and select OPEN. The program will start a Windows dialog. Browse through the computer system to find and select a file. The new selection will be opened and its contents will appear in the edit fields. The file name will appear near the top of the main form.

Step 7: Test communication and satellite controller operation

- Place the decoder module mode switch in the NORMAL (center) position.
- Select the desired channel frequency (1–4) by placing the jumper plug on the appropriate jumper pin set as shown in **Figure 6**. (Channel frequency number 1 is selected in this example.)
- If the satellite controller address code was not previously set during initial installation, set the address code at this time.
- The address numbers range from 1 (001) through 255 and are issued to the satellite through an array of eight DIP switches, as shown in **Figure 7**. In the down position, the switch is Off (open) and represents a value of 0 (zero). In the up position, the switch is On (closed) and represents the following value:

Sw 1 = 1 Sw 2 = 2 Sw 3 = 4 Sw 4 = 8
Sw 5 = 16 Sw 6 = 32 Sw 7 = 64 Sw 8 = 128

Example: To set satellite address number 50 (050), start with all eight DIP switches in the Off position. Using a pen or small screwdriver, move switch numbers 2, 5 and 6 to the On position ($2+16+32=50$). See **Figure 7**.

- Referring to the switch position matrix in **Figure 8** on the back page, locate the desired address number and set the DIP switches accordingly. A dot in the switch position represents On; an open box represents Off.
- **For E-Series OSMAC only:** Confirm that the satellite controller power switch is Off (O) and the Pump and Field Common control switches are in Off (center) position.
- Reinstall the decoder module, making the appropriate wire or cable connections.

For RDR OSMAC satellite only:

⚠ Important: Attach the Red 12 V a.c. and Orange 26 V a.c. wires prior to connecting the Black Common wire to the decoder module. Ensure all wires are properly routed to prevent interference with the RDR cabinet door.

- **E-Series OSMAC only:** Place the satellite controller power switch in the On (I) position.
- Send a series of commands to the satellite controller using the OSMAC base station programmed to the correct frequency and controller address. Verify that the decoder module is receiving the commands and the controller is responding properly.
- **E-Series OSMAC only:** Move the Pump and Common Switches to the AUTO (down) position. Reinstall the clear plastic cover over the decoder module and close the controller cabinet.

Figure 6

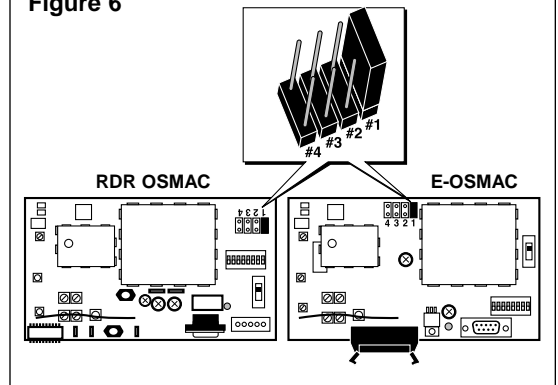


Figure 7

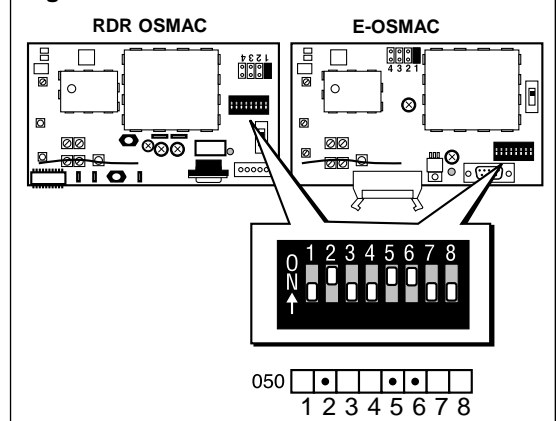


Figure 8

Satellite address DIP switch matrix – ☒ = On ☐ = Off

1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
001	•							052			•		•	•		103	•	•	•			•	•	154		•		•	•			•	205	•		•	•		•	•
002		•						053	•		•		•	•		104			•		•	•	155	•	•		•	•			•	206		•	•		•	•		
003	•	•						054		•			•	•		105	•		•		•	•	156			•	•			•	207	•	•	•		•	•			
004			•					055	•	•	•		•	•		106		•			•	•	157	•		•	•			•	208				•	•	•			
005	•		•					056				•	•	•		107	•	•		•	•	•	158		•	•	•			•	209	•			•	•	•			
006		•	•					057	•			•	•	•		108			•	•	•	•	159	•	•	•	•			•	210		•		•	•	•			
007	•	•	•					058		•		•	•	•		109		•	•	•	•	•	160					•	•	211	•	•		•	•	•	•			
008				•				059	•	•		•	•	•		110		•	•	•	•	•	161	•				•	•	212		•	•		•	•	•			
009	•			•				060			•		•	•		111	•	•	•	•		•	162		•				•	213	•		•		•	•	•			
010		•		•				061	•		•		•	•		112					•	•	163	•	•			•	•	214		•	•		•	•	•			
011	•	•		•				062		•	•	•	•	•		113	•				•	•	164			•		•	•	215	•	•	•		•	•	•			
012			•	•				063	•	•	•	•	•	•		114		•			•	•	165	•		•			•	216			•	•	•	•				
013	•		•	•				064							•	115	•	•			•	•	166		•				•	217	•		•	•	•	•				
014		•	•	•				065	•						•	116			•		•	•	167	•	•	•			•	218		•	•	•	•	•				
015	•	•	•	•				066		•					•	117	•			•	•	•	168			•		•	•	219	•	•	•		•	•	•			
016					•			067	•	•					•	118		•	•		•	•	169	•		•		•	•	220			•	•	•	•	•			
017	•				•			068			•				•	119	•	•			•	•	170		•	•			•	221	•		•	•	•	•	•			
018		•			•			069	•		•				•	120				•	•	•	171	•	•			•	•	222		•	•	•	•	•	•			
019	•	•			•			070		•	•				•	121	•			•	•	•	172		•	•			•	223	•	•	•	•		•	•			
020			•		•			071	•	•	•				•	122		•		•	•	•	173	•		•			•	224				•	•	•	•			
021	•		•		•			072				•			•	123	•	•		•	•	•	174		•	•			•	225	•			•	•	•	•			
022		•	•		•			073	•						•	124			•		•	•	175	•	•	•			•	226				•	•	•	•			
023	•	•	•		•			074		•					•	125	•			•	•	•	176				•		•	227	•	•		•	•	•	•			
024				•	•			075	•	•					•	126		•	•	•	•	•	177	•			•	•	•	228		•		•	•	•	•			
025	•			•	•			076			•				•	127	•	•	•	•	•	•	178		•		•	•	•	229	•		•		•	•	•			
026		•		•	•			077	•		•				•	128						•	179	•	•		•	•	•	230		•	•		•	•	•			
027	•	•		•	•			078		•	•				•	129	•					•	180			•			•	231	•	•		•	•	•	•			
028			•	•	•			079	•	•	•				•	130		•				•	181	•		•			•	232			•	•	•	•	•			
029	•		•	•	•			080							•	131	•	•				•	182		•	•			•	233	•		•		•	•	•			
030		•	•	•	•			081	•						•	132			•			•	183	•	•	•			•	234		•		•	•	•	•			
031	•	•	•	•	•			082		•					•	133	•		•			•	184			•			•	235	•	•		•	•	•	•			
032					•			083	•	•					•	134		•	•			•	185	•		•			•	236				•	•	•	•			
033	•				•			084			•				•	135	•	•	•			•	186		•		•		•	237	•		•		•	•	•			
034		•			•			085	•		•				•	136				•		•	187	•	•		•		•	238		•	•		•	•	•			
035	•	•			•			086		•	•				•	137	•		•			•	188			•			•	239	•	•	•		•	•	•			
036			•		•			087	•	•	•				•	138		•		•		•	189	•		•			•	240			•	•	•	•	•			
037	•		•		•			088				•			•	139	•	•		•		•	190		•	•			•	241	•			•	•	•	•			
038		•	•		•			089	•			•	•		•	140			•			•	191	•	•	•			•	242		•		•	•	•	•			
039	•	•	•		•			090		•		•	•		•	141	•		•	•		•	192					•	•	243	•	•		•	•	•	•			
040				•	•			091	•	•		•	•		•	142		•	•	•		•	193	•				•	•	244			•	•	•	•	•			
041	•		•		•			092			•				•	143	•	•	•	•		•	194		•				•	245	•		•		•	•	•			
042		•		•	•			093	•		•	•	•		•	144					•	•	195	•	•				•	246		•	•		•	•	•			
043	•	•		•	•			094		•	•	•	•		•	145	•			•		•	196			•			•	247	•	•		•	•	•	•			
044			•	•	•			095	•	•	•	•	•		•	146		•		•		•	197	•		•			•	248			•	•	•	•	•			
045	•		•		•			096					•	•	•	147	•	•		•		•	198		•	•			•	249	•		•	•	•	•	•			
046		•	•	•	•			097	•				•	•	•	148			•		•	•	199	•	•	•			•	250		•		•	•	•	•			
047	•	•	•	•	•			098		•				•	•	149	•		•		•	•	200			•			•	251	•	•		•	•	•	•			
048					•	•		099	•	•				•	•	150		•	•		•	•	201	•		•			•	252			•	•	•	•	•			
049	•				•	•		100			•			•	•	151	•	•	•		•	•	202		•		•		•	253	•		•	•	•	•	•			
050		•			•	•		101	•	•				•	•	152				•	•	•	203	•	•			•	•	254		•	•	•	•	•	•			
051	•	•			•	•		102	•	•				•	•	153	•			•	•	•	204			•			•	255	•	•	•	•	•	•	•			