APOLLO SL40
VHF Communications Transceiver

User's Guide

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Welcome ...

Welcome to a new era of aviation communication. Once again, II Morrow Inc. has set new standards in features and ease of use for the general aviation public. The Apollo SL40 is a VHF Communications Transceiver for use by the aviation pilot. Packaged in a new slim form factor that helps you get the most out of limited panel real estate without limiting features and performance. The Apollo SL40 is unequaled in providing the features, level of performance, and reliability that aviation users expect. The Apollo slim line series of avionics sets a precedent that will be the standard that all other avionics will be compared to. You can be confident in knowing that you are the owner of the state-of-the-art in aviation communication. Our products are built to last and to allow for upgrading as your needs change in the future.

The SL40 is also packaged in configurations to meet the needs of customers for base station and mobile applications. Contact the II Morrow factory for more details.

History of Revisions

December 1996	Original Release
March 1997	Rev. -01
June 1998	Rev. -02

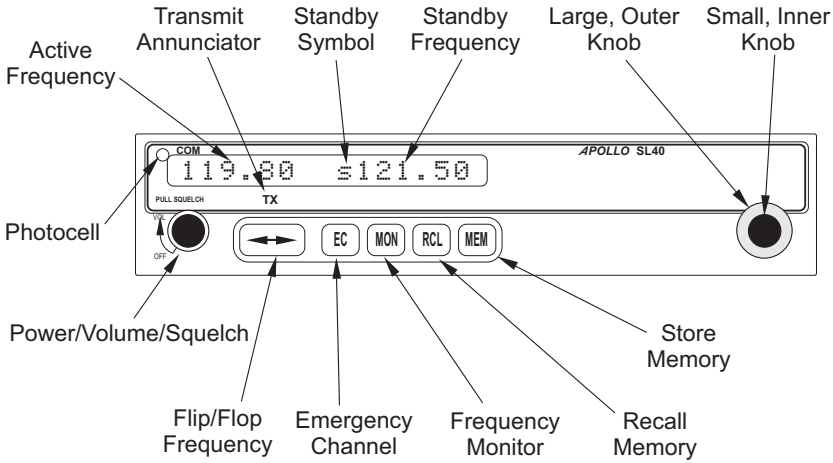
Ordering Information

To receive additional copies of the Apollo SL40 User's Guide, order part #560-0954-02. The Apollo SL40 Installation Guide is part #560-0956-xx.

Table of Contents

Introduction

This guide describes the operation of the Apollo SL40 VHF Communication Transceiver.



Display

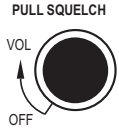
The 1-line by 16-character display is composed of 5x7 dot matrix alphanumeric high intensity LEDs. A photocell is located in the top left corner of the front panel display. The photocell automatically controls the intensity of the display from low brightness at night to high brightness during daylight operation. Brightness levels may also be controlled manually.

Annunciators

Several annunciators are used to help indicate the operating modes of your Apollo SL40. The TX (Transmit) annunciator is lighted whenever you are transmitting. If the avionics bus drops below 9 VDC, the SL40 will not transmit. An LED will be lighted above the **MON** and **RCL** buttons when these functions are selected. An “s” will appear to the left of the Standby frequency. An “m” will appear to the left of the Standby frequency when you are using the Monitor function. An “I” indicates the Intercom function is being used.

TX - Transmit
s - Standby Frequency
m - Monitor Mode
I - Intercom

Controls



Power/Volume/Squelch

The knob on the left side of the SL40 controls power on/off, volume, and squelch test. Rotate the knob clockwise (CW) past the detent to turn the power on. Continuing to rotate the knob to the right increases speaker and headphone amplifier volume level. Rotate the knob to the left to reduce the volume level. Pull the knob out to disable automatic squelch. The SL40 may be installed to have the on/off switch disabled and to have power controlled from the avionics panel.

Large and Small Knobs

The dual concentric knobs on the right side of the SL40 are used to select frequencies or to view the features available within a function. Details are provided in the appropriate section.

Buttons

Five backlighted buttons allow you to access the functions in your Apollo SL40.

Flip/Flop (Arrows)

Press the **Flip/Flop** button to switch between the active (left-most) and standby (right-most) frequency. Switching between frequencies is disabled while you are transmitting.

EC (Emergency Channel)

Press the **EC** button to load the Emergency Channel (121.500 MHz) as the standby frequency. The Monitor function is automatically enabled.

MON (Monitor)

Press the **MON** button to listen to the standby frequency. When the active frequency receives a signal, the unit will switch automatically to the active frequency.

RCL (Recall)

Press the **RCL** button to retrieve stored frequencies.

MEM (Memory)

Press the **MEM** button to store the displayed Standby frequency in memory.

Basic Operation

This section introduces the basic operating details of the Apollo SL40 VHF Communications Transceiver.

Power On/Off

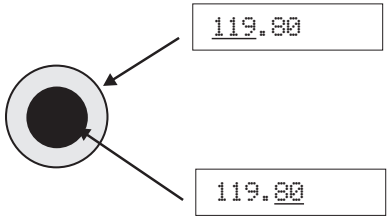
Turn the **Power/Volume** control clockwise past the OFF detent. The SL40 may be installed to be powered from the avionics panel so the on/off control will be disabled.

Volume

Turn the **Power/Volume** control clockwise to increase the volume level and counterclockwise to decrease volume.

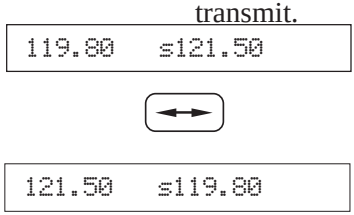
Selecting Frequencies

New frequencies are first selected as a Standby frequency and then toggled to the Active side when desired. While viewing the frequency display, use the **Large** and **Small** knobs on the right side of the SL40 to select the desired frequency.



1. Turn the **Large**, outer knob to change the values in 1 MHz increments. The MHz selection range is between 118 and 136 in 1 MHz steps.
2. Turn the **Small**, inner knob to change the values in 25 kHz increments. The kHz selection range is between 000 and 975 kHz in 25 kHz steps. Note that only two digits are displayed to the right of the decimal point.

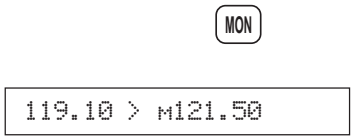
Turn the **Large** and **Small** knobs clockwise to increase and counterclockwise to decrease the frequency values. Standby frequency selection is not inhibited during transmit.



Press the **Flip/Flop** button to toggle the Standby frequency to the Active frequency.

Frequency Monitoring

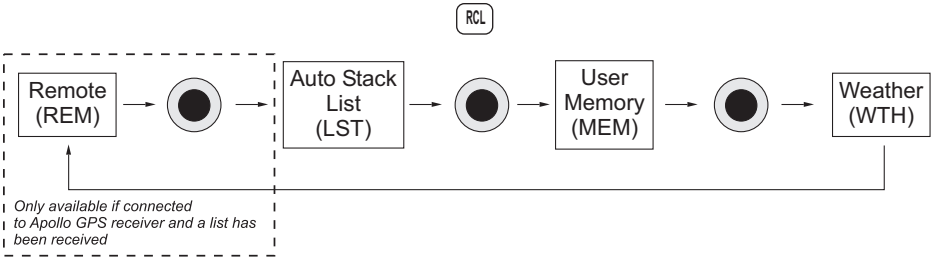
The Frequency Monitoring function allows you to listen to the Standby frequency, while monitoring the Active frequency for activity.



Press the **MON** button to listen to the standby frequency. A small "m" is displayed in front of the Standby frequency. When the Active frequency receives a signal, the unit will switch automatically to the Active frequency and then switch back when activity ceases. An arrow (< or >) will point to the frequency that you are currently listening to. A slight clicking sound occurs when the radio is checking the Active frequency for activity. The Monitor function is deactivated when you transmit or press **MON**.

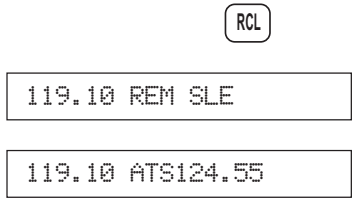
Recalling a Frequency

The SL40 can access several areas of stored frequencies. The SL40 can also receive airport frequencies if connected to certain Apollo GPS receivers.



Remote (REM)

The Remote function will allow the SL40 to access the airport frequency database in an Apollo GPS receiver.

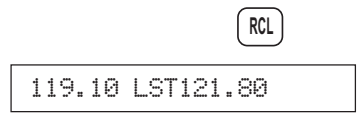


Press **RCL** to view the Remote (REM) frequencies. Then, turn the **Small**, inner knob to display the available frequencies. The waypoint type and frequency are displayed.

If not connected to an Apollo GPS, or the list is not received, the list will not be available.

TWR - Tower frequency
GND - Ground frequency
ATS - ATIS frequency
ATF - Air Traffic Frequency
APP - Approach
ARR - Arrival
AWS - Automatic Weather Station
CLR - Clearance/Delivery
CTF - Common Traffic Advisory Frequency
DEP - Departure frequency
FSS - Flight Service Station
RFS - Remote Flight Service Station
UNI - Unicom frequency
MF - Mandatory Frequency

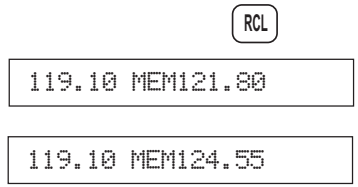
Auto Stack List (LST)
The SL40 keeps track of the last eight Active frequencies and stores them in a stack. Duplicate frequencies are not stored.



Press **RCL** and then turn the **Large**, outer knob to display the Auto Stack List (LST).

Then, turn the **Small**, inner knob to view the stored frequencies. Frequencies are shown in the order of use.

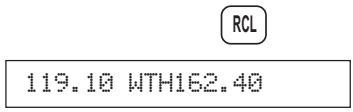
User Stored Frequencies (MEM)
When you press the **MEM** button the Standby frequency is stored in User memory. The SL40 stores the last eight frequencies selected by the user. After eight User frequencies are stored, you will be prompted that the stack is full (mem full). You may then remove or replace the frequency, or abort the process. Duplicate frequencies are not stored.



Press **RCL** and then turn the **Large**, outer knob to reach the User frequencies.
Turn the **Small**, inner knob to view the User stored frequencies in numeric order.

Weather (WTH)

The standard weather channels are stored in the memory of the SL40. You cannot transmit on a weather channel frequency. A small "x" to the right of the Active frequency indicates that transmitting is not permitted.



Press **RCL** and then turn the **Large**, outer knob to display the weather (WTH) channel memory.

Then, turn the **Small**, inner knob to view the available weather channels.

Weather Frequencies

162.400 MHz
162.425 MHz
162.450 MHz
162.475 MHz
162.500 MHz
162.525 MHz
162.550 MHz

Aborting a Frequency Recall

You may abort the recall of a frequency so the current Standby frequency will remain in place.

1. Press **RCL**. While viewing one of the frequency types, press **MEM**. If you are viewing a REM, LST, or WTH frequency type, the display will read "Abort RCL." If you are viewing a User (MEM) frequency type, turn the **Large** knob to "Abort RCL."

2. Press **MEM** again to abort the recall and retain the current Standby frequency.

Removing a Frequency from User Memory

You may edit the contents of User memory to remove its stored frequencies when you want to make a change or you receive a "MEM Full" message.

1. Press **RCL**. Turn the **Large** knob to the User (MEM) frequencies.

2. Press **MEM**. Turn **Large** knob to show "Remove."

3. Turn the **Small** knob to choose the frequency to Remove.

4. Press **MEM** to remove the frequency. Or, turn the **Large** knob to "Abort" and press **MEM** to cancel and leave memory as it was.

Replacing a Frequency from User Memory

You may edit the contents of User memory to replace its stored frequencies when you want to make a change or you receive a "MEM Full" message.

1. Select the desired new frequency with the **Large** and **Small** knobs.

2. Press **RCL**. Turn the **Large** knob to the User (MEM) frequencies.

3. Press **MEM**. Turn **Large** knob to show "Replace."

4. Turn the **Small** knob to choose the frequency to Replace.

5. Press **MEM** to replace the displayed stored frequency with the current Standby frequency. Or, turn the **Large** knob to "Abort" and press **MEM** to cancel and leave memory as it was.

Assigning an ID to a User Frequency
Frequencies in User (MEM) memory can be given an alphanumeric identifier for your ease of use.

1. Press **RCL**. Turn the **Large** knob to the User (MEM) frequencies.
2. Press **MEM** and hold it for about two seconds. “Assign ID” and the frequency to be given an ID will be displayed.
3. Turn the **Small** knob to select the desired User frequency.
4. Press **MEM**. Six underscored spaces will appear and the first one will flash.
5. Turn the **Small** knob to select characters. Turn the **Large** knob to move to another space. Continue to select the desired characters.
6. Press **MEM** to save the displayed ID. Turn the **Large** knob to “Done” and press **MEM**.

The alphanumeric ID for a frequency is displayed only when looking at user stored frequencies using the recall (RCL) feature. The stored frequency is displayed numerically once selected as the active or standby frequency.

You can remove the ID for a frequency while retaining the frequency in User memory by setting all characters to underscores and pressing **MEM**.

Intercom Function

When two headphone and microphone jacks are connected to the SL40, these headsets can be used as a voice-activated intercom.

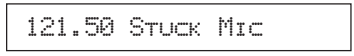
When you select the Intercom function with the installed selector switch, the intercom function is enabled. The Volume control will control the headphone listening level. The receive function will automatically become active when a signal is detected, but the volume will be reduced during intercom activity. A small "I" is displayed above and to the left of the "s" or "m" of the standby frequency to indicate the Intercom function is selected.

The Microphone Squelch Sensitivity can be set in the System Functions.

Stuck Mic

The SL40 helps protect you from a situation where the microphone may get stuck in the ON or Transmit position. If the microphone is keyed for longer than 35 seconds, the SL40 will return to the receive mode on the selected frequency.

A flashing "Stuck Mic" message will display until the transmit key is released.

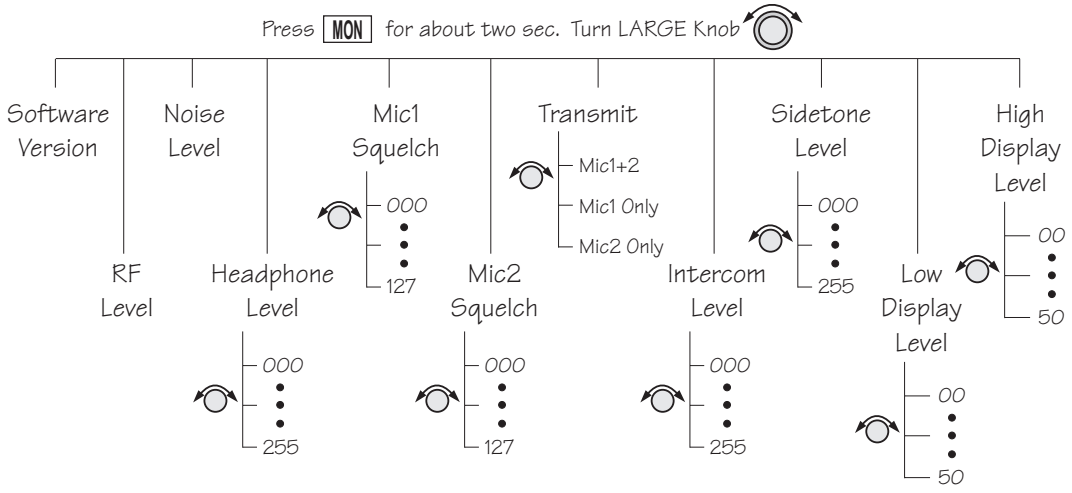


Note

In an emergency situation, if the "Stuck Mic" message remains after you have stopped keying the mic, turn the power off and then back on. You will then get another 35 second time-out period to transmit.

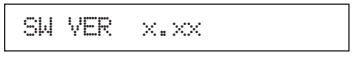
System Functions

The SL40 includes a number of System Functions that give you more information about your communication equipment. Press and hold the **MON** button for about three seconds to reach the System Function. Turn the **Large,** outer knob to display the available functions. Adjustments are made with the **Small**, inner knob.



Software Version

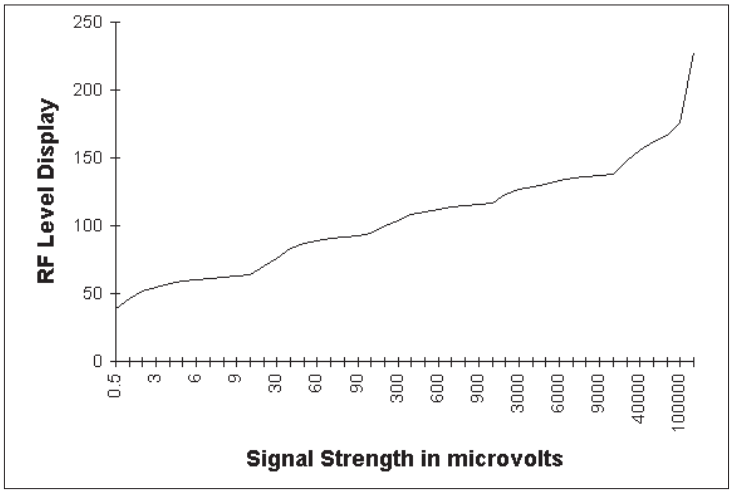
The Software version is available for reference when you contact Technical Support.



RF Level

The RF Level function shows the relative signal strength of the frequency you are listening to. The range displayed is between 0 and 255. The value will constantly change as you are viewing it as signal conditions change.

```
RFLVL          123
```



Noise Level

The Noise Level function shows the relative received noise level of the frequency you are listening to. The range displayed is between 0 and 255. The value will constantly change as you are viewing it as signal conditions change.

```
NOISE          017
```

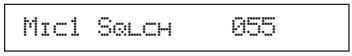
Headphone Level

The Headphone Level function allows you to adjust the headphone audio level. Turn the **Small** knob to change the value. Setting the value to 0 slaves the headphone audio level to the volume control knob. The range is from 0 to 255.

```
HDPHON LVL     014
```

Mic Squelch 1 and 2

The input level required to break squelch by the microphone is set from this page. Lower numbers indicate a higher input level necessary to break squelch. Turn the **Small** knob to change the value. The range is from 0 to 127.



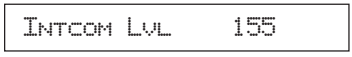
Transmit Mic

The Transmit Microphone page allows you to control which microphone is permitted to transmit. You may choose Mic 1, 2, or both. To adjust the Transmit Mic control:

1. Press and hold the **MON** button for about two seconds. This will access the System Functions mode.
2. Rotate the **Large** knob to display the Transmit Mic page.
3. Rotate the **Small** knob to select MIC1, MIC2, or MIC1+MIC2.
4. Press any key to exit the Setup Functions mode.
5. Select an appropriate frequency, key the transmitter, and talk into the microphones to check for the intended operation.

Intercom Level

This function adjusts the Intercom Audio Level. Turn the **Small** knob to change the value. The range is from 0 to 255. Setting the value to 0 slaves the sidetone level to the volume control knob.



Sidetone Level

This function displays and adjusts the sidetone audio level. Turn the **Small** knob to change the value. The range is from 0 to 255. Setting the value to 0 slaves the sidetone level to the volume control knob.

```
SIDTON LVL    131
```

Display Brightness

As it arrives from the factory, the SL40 automatically adjusts its display brightness for the current lighting conditions. A small sensor at the upper left of the display is used for this function. There are two adjustments available for controlling the brightness level of the display. The first controls the lower brightness level in the automatic adjustment range (Lo Dsp Lvl). This is the brightness used when in total darkness. The second adjusts the upper limit of this range (Hi Dsp Lvl). This is used when bright light is shining on the display.

The factory settings for these are at the limits of the range, 0 (Lo Dsp Lvl) and 50 (Hi Dsp Lvl). The range can be reduced if desired using the inner knob to adjust the two values.

Some users may wish to disable the automatic dimming function. This can be accomplished by setting the high display level to zero. Now the low level adjustment will set the brightness of the display directly with no automatic adjustment made based on ambient light.

SL40 Specifications

Features

760 Communication Channels

Frequency Range: 118 to 136.975 MHz

Active and Standby Flip/Flop Frequencies

Volume Control

16-Character High-Intensity Alphanumeric LED Display

Automatic Display Intensity Control

Backlit Keypad Controls

Transmit Status Indicator

2x8 Frequency Memory and Recall

- Stores/Recalls Eight User-Defined Frequencies (user-programmable alphanumeric naming of frequencies)
- Stores/Recalls Previous Eight Frequencies

Frequency Monitor Function (listens to standby while monitoring the active)

Voice Activated Intercom

Dedicated Emergency Channel Selector

Upgradeable to Include GPS Option

Squelch Test Function

Stuck Mic Time-Out - 35 seconds

Performance

Transmit Power: 8 watts Carrier Power (28 watts Input Power)

Input Voltage Range: 10 to 40 VDC

Operating Temperature Range: -20° to +55° C

Certified TSO C37d (transmitting)

Certified TSO C38d (receiving)

Certified TSO C128 (Stuck Mic)

Physical

1.3” (H) x 6.25” (W) x 10.5” (D)

Weight: 2 lbs

Notes

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