

User Keys for RPN-25 CE

User Keys are an extension of the regular keys provided by the calculator. Similar to the keys available on some models, like HP-65 and HP-67, they can be programmed to call any subroutine of the user's program. On RPN-25, they appear as short texts (up to 6 characters). Tapping a User Key will run the associated subroutine.

An empty text, or a text consisting of a single underscore (`_`), will be ignored.

5 key positions are available. Additional keys may be accessed via the **f** and **g** modifier keys, for a total of **15 callable subroutines**.

User Keys may be modified under program control, allowing for a context-sensitive user interface.



Unshifted User Keys



f-shifted User Keys



g-shifted User Keys

PROGRAMMING A USER KEY

(To see the code behind the screenshots above, refer to the sample program **TVM 14B - Time Value of Money*** in the RPN-25 CE program library.)

Two commands are available to create a User Key:

USR*n text*

USR*ni text*

where:

n the key number (1...5), from left to right

text the key legend(s), shown above the display

Direct Calls

Keys created by the following commands call *pre-defined labels*:

USR*n text* calls the subroutine labeled **_LBL9***n*

f **USR***n text* calls the subroutine labeled **_LBL8***n*

g **USR***n text* calls the subroutine labeled **_LBL7***n*

Indirect Calls

Keys created by the following commands call *labels* whose number is stored in *pre-defined registers*:

USR*ni text* calls the subroutine with the label defined in **register 9***n*

f **USR***ni text* calls the subroutine with the label defined in **register 8***n*

g **USR***ni text* calls the subroutine with the label defined in **register 7***n*

Indirect calls allow changing the action routine of a User Key under program control.

WALK-THROUGH EXAMPLE

Create a User Key named **Beep**, centered above the display. When **f** is pressed, the User Key should change into **Done**. When tapped, the appropriate sound should be heard.

Step-by-step instructions:

1. Enter **W/PRGM** mode, then clear the program memory.

2. Double-tap the display, then tap **SYSTEM**

3. Tap the following items:

USR3 text

TEXT (*at the bottom*)

Enter **Beep** in the text field

Save

Insert

This stores the command to create a User Key named **Beep** in the 3rd position.

To verify:

Switch to **RUN** mode

Execute **SST**

Tap the User Key named *Beep*

This should cause a „Label not found“ error

So let's create the **_LBL93** expected by **USR3** and program the beep sound.

4. Switch to **W/PRGM** mode again

5. You should see a GTO 000 command. If not, press SST.

6. Double-tap the display, then tap **SYSTEM**, then tap the following items:

_LBL nn

Tap the **-10** button at the bottom once, the **+1** button three times.

You should see **nn = 93**.

Insert

7. Double-tap the display, then tap **SYSTEM**, then tap the following items:

BEEP (*scroll down a bit*)

Insert (*or double-tap BEEP*)

g RTN

Run your new User Key:

Switch to **RUN** mode

Execute **g RTN R/S** to go to initialize your User Key

Tap the User Key named *Beep*

Now, let's add the *second sound* to the same key, which will be triggered by tapping **f Beep**.

8. Tap **g RTN** to go to step 0, then Switch to **W/PRGM** mode

9. Tap **SST** to find our **USR3:** command in step 1

10. **Double-tap the display**. The User Key is already selected.

11. Tap the following items:

TEXT (*at the bottom*). You should see your existing *Beep* key legend.

Add **;****Done** directly after the word *Beep in the text field* (note the semicolon)

Save

Replace (this updates the existing step 1)

Run your modified User Key:

Switch to **RUN** mode

Execute **g RTN R/S** to update the User Key

Tap the User Key named *Beep*. It should work as before.

Tap the **f** and **g** keys repeatedly to see the User Keys change.

Tap the **Done** User Key – you'll get a „Label not found“ error again.

We have to add the action subroutine for the shifted User Key.

12. Switch to **W/PRGM** mode

13. Use **SST** and **BST** to find **step 2** (GTO 000).

The **f-shifted** key 3 will call **_LBL83**. We'll place the subroutine right before **_LBL 93**.

14. Double-tap the display, then tap **SYSTEM**, then tap the following items:

_LBL nn

Tap the **-10** button so that you see **nn = 83**.

Insert

15. Double-tap the display, then tap **SYSTEM**, then tap the following items:

DONE (*scroll down a bit*)

Insert (*or double-tap DONE*)

g RTN

Run your modified User Key:

Switch to **RUN** mode

Execute **g RTN R/S** to update the User Key

Tap the User Key named *Beep*. It should work as before.

Tap **f Done** – now you can hear the shifted sound.

And we're in fact done.

Final Program Code

```
001 - 58 03 Beep;Done  USR3:
002 - 13 00                GTO 000

003 - 39 83                _LBL 83
004 - 14 81                DONE
005 - 15 90                RTN

006 - 39 93                _LBL 93
007 - 81                  BEEP
008 - 15 90                RTN

009 - 13 00                GTO 000
```

NOTES

- Placing the USR initialization routines at the top of a program makes it possible to use the **Auto-Start** feature of RPN-25 CE to automatically set up the User Keys on loading the program. Saving a program stores the state of the switch **Auto-Start on Program Loading** in *Settings* along with the program.
- All **User Keys** may be **removed** by executing **USR CLR**, or by turning the calculator OFF.
- Double-tapping a **USR n** program instruction finds its corresponding **_LBL $9n$** instruction. Double-tapping a **_LBL $9n$** , **_LBL $8n$** , or **_LBL $7n$** program instruction finds its corresponding **USR n** instruction. (Not applicable to indirect USR calls, of course.)
- RPN-25 **sample programs** with User Keys are marked with a dot (•).