

automatic searching function on the touch-type screen **11** and then use the original remote control to transmit remote control codes to the remote control body **10**. As such, the microprocessor **30** of the processing unit compares the received remote control codes and the default remote control codes. If a matched one is found, a message is displayed on the touch-type screen **11** to notify the user to test the remote control. If the test is successful, the learning procedure is completed, and the matched default remote control code is stored in a specific location of the memory unit **31**. Subsequently, the learning procedure can be terminated by exiting the program item or repeated for other manufacturers' appliances. The control flow chart of the automatic searching procedure is shown in **FIG. 12**, which includes:

[0052] a remote control code determination step to determine whether there is a remote control code input after starting the automatic searching;

[0053] a comparing value generation step in which the universal remote control automatically learns the data of the remote control code so as to generate comparing value;

[0054] an automatic comparing step to compare the comparing value and the default remote control codes, and determine whether there is a same remote control code in the remote control;

[0055] a prompt and test step for displaying a message to notify the user to test the learned remote control code and confirm its correctness; and

[0056] a storage procedure for writing the confirmed default remote control code into a specific location of the memory unit **31**.

[0057] After completing the above steps, the automatic searching procedure can be terminated or repeated for other manufacturers' appliances.

[0058] No matter what kind of learning procedure is used, the duplicate item in the setting menu can be used, when a universal remote control has been programmed, to copy the settings to other universal remote controls. In such a duplicate process, the signals are transferred via the infrared transmitter **12** and receiver **13** of the universal remote control. The detailed control flow for this duplicate process is shown in **FIG. 14**.

[0059] Furthermore, the adjust item in the setting menu is used to change the size and position of each touch-type item in the main menu. With reference to **FIG. 15A**, there is shown a screen corresponding to the adjust item, which is the same as that of the main menu, except that there is an undo button **113** and a switch button **114** on the upper-left and upper-right portion of the screen. The change of the size and position of the touch-type items is provided to satisfy the user's habit and preference. An example of changing the size and position of the VCR item is given as follows:

[0060] First, the user touches the VCR item, as shown in **FIG. 15A**, and also touches the touch-type screen at a desired position, for example the upper-left portion, as shown in **FIG. 15B**. As such, a small block pattern is present at the desired upper-left portion as a mark. Next, the user touches the touch-type screen **11** at a diagonal position corresponding to the small block pattern, so as to have another small block pattern appear thereon, as shown in **FIG. 15C**. The area between these two block patterns is used to define the new position and size for the VCR item. When the user touches the VCR item again, as shown in **FIG. 15D**,

the VCR item is moved to the new position with a new size, as shown in **FIG. 15E**. The detailed control flow for the above adjust process is given in **FIG. 16**.

[0061] In addition to changing the size and position of an item, it is also applicable to change the title of the item. **FIG. 17** shows a control flow to change the title for each item. As shown, when entering an edit text mode, a keyboard pattern is present on the touch-type screen, as shown in **FIG. 18**. At this moment, the user can use the previous page button **111** and the next page button **112** at the bottom of the screen to select the re-defined characters. After such a key-in operation is done, the user can press the mute/enter button **24** of the basic button set **20** to complete the change of the title for an item.

[0062] Moreover, **FIG. 19A** shows control flow of the channel classification function, which first selects the classification type, such as 'news', 'recreation', 'sport', etc., after entering the channel classification setting menu via the main menu. When a desired classification type is selected, the channel numerals of the corresponding channel are entered and stored. Then, such a channel classification setting process is terminated or repeated for setting other classification types. This channel classification function can also be used to gather the viewer's favorite channels, instead of the channels of the same type.

[0063] In use of the channel classification function, as shown in **FIG. 19B**, a channel classification item is selected from the main menu so that the data of all the channels corresponding to the selected classification type is read out. When a desired channel is read, the universal remote control automatically sends the remote control code of the channel to complete the channel select operation.

[0064] Furthermore, the microprocessor **30** of the processing unit is built with a timing function for providing a remote timer capability. That is, multiple remote timers are provided, and each remote timer can be used to activate a specific electrical appliance when its timing count is finished. Therefore, the timers simply can be set and the universal remote control placed to face a signal receiver of the controlled electrical appliances, so as to transmit remote control codes to the electrical appliances and thus activate the electrical appliances when the setting counts are reached. Such a timer capability can be combined with the macro function to initiate a series of remote control operations when a setting time is reached.

[0065] In addition, for the remote timer capability and the macro function, there is generally a plurality of items available, and each item is denoted by a sequence number. When the quantity of items gets large, it is not each for the user to remember the function of each item by the sequence number. Therefore, the processing unit provides a re-define function, which is similar to the edit text mode in the adjust process, to define a new title for each item, so that the user can be aware of its function easily.

[0066] In view of the foregoing, it is appreciated that the intelligent touch-type universal remote control in accordance with the present invention is provided with the following advantages:

[0067] (1) The menu items can be designed based on the user's preference, such that the interface is user-friendly.

[0068] (2) The use of touch-type screen in conjunction with page selection buttons make the operation easy.

[0069] (3) The learning procedure is performed by operating one key at a time, thereby greatly improving the convenience in the learning process.