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(54) Title: SET TOP BOX SUPPORTING CELLULAR SHORT MESSAGE SERVICE

(57) Abstract: A set-top box decoder arrangement (10) comprises a decoder (12) for television services (18). The decoder (12) is connectable to a monitor (21). The arrangement comprises a controller (28) for executing a short message service (SMS) application for formatting input data received from a user via remote control unit (22) into a short message. The arrangement (10) further comprises a transceiver (26) for transmitting the message to a user selectable addressee and for receiving incoming messages from a remote contact for selective display on the monitor (21).
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SET TOP BOX SUPPORTING CELLULAR SHORT MESSAGE SERVICE

TECHNICAL FIELD

This invention relates to decoders for encoded broadcast service signals. The invention more particularly relates to set top box decoders for television service signals.

SUMMARY OF THE INVENTION

According to the invention there is provided an encoded service decoder arrangement comprising:

- a decoder for decoding encoded services;
- the decoder being connectable to a monitor;
- controller means cooperating with the decoder and running a text message service application, for formatting input data into a text message;
- means for transmitting the text message; and
- means for receiving and displaying on the monitor a text message received.

The text message service may be a short message service and in this specification, the term short message service (SMS) is used to denote a service which enables a user to send and receive a short message (SM) via telecommunications systems, such as GSM cellular systems.
A short message is a data unit comprising Short-Message-Text and additional data necessary for the transmission of the Short-Message-Text from a sending to a receiving user of the telecommunications system.

In some embodiments, the arrangement may be housed in a single housing or set top box.

In other embodiments the means for transmitting the short message and the means for receiving a short message may be housed in a separate housing and connected to the controller via a suitable link.

The means for transmitting the short message and the means for receiving a short message may comprise a GSM transceiver and/or a public switched telephone network (PSTN) modem and/or an asynchronous digital subscriber line (ADSL) modem. In other embodiments the means for transmitting the short message may comprise at least a transmitter part of the aforementioned GSM transceiver and the means for receiving a short message may comprise a conventional television service receiver means.
In yet other embodiments the means for transmitting the text message and the means for receiving a text message comprise at least one of a satellite service transceiver, a terrestrial service transceiver and a cable service transceiver.

The text message service application may be permanently resident in a memory arrangement of the controller.

In other embodiments the application may be loaded into the decoder arrangement upon selection of a service.

The application may be configured selectively to generate a template on the monitor for composing a message to be transmitted.

The arrangement may comprise an input device for manually entering a Short-Message-Text into a Short-Message-Text buffer. The buffer may be connected to an input of the controller.

The input device may for example comprise a hand-held remote control unit for the arrangement.
The controller may be connected to the means for transmitting the SM, to enable the means for transmitting the SM to transmit the SM in response to a user entered command to the controller.

The arrangement may further comprise a received SM buffer connected between the means for receiving a SM and an input of the controller.

An output of the controller may be connected to a video display output buffer which in turn is connected to the monitor to cause a SM received to be displayed on the monitor.

Also included within the scope of the present invention is a method of broadcasting encoded services, the method comprising the steps of:

- broadcasting a computer executable text message service application;
- enabling a user to select the application for execution on a controller of a decoder arrangement for encoded services; and
- enabling the user to utilize the application to write text messages and to transmit the written message to an addressee and to receive and read text messages received from a remote contact.
The application may be broadcasted together with an encoded service and the application may be selectable by the user while the service is selected only.

In other forms of the method the application may permanently be resident in a memory arrangement of the controller to be selected by the user, independently of a service selected.

**BRIEF DESCRIPTION OF THE ACCOMPANYING DIAGRAMS**

The invention will now further be described, by way of example only, with reference to the accompanying diagrams wherein:

figure 1 is a block diagram of a first embodiment of a set-top box decoder arrangement according to the invention;

figure 2 is a block diagram of a second embodiment of the arrangement according to the invention;

figure 3 is a more detailed functional block diagram of the arrangement according to the invention;

figure 4 is a flow diagram of a short message send function of an SMS application running on a master controller of the arrangement;
figure 5 is a flow diagram of a short message receive function of the SMS application running on the master controller of the arrangement;

figure 6 is a block diagram of yet another embodiment of the arrangement;

figure 7(a) is a diagram of a screen of a television set having a banner for short messages in a bottom region thereof with a service being displayed in the background; and

figure 7(b) is a view of the banner maximized.

DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

A decoder arrangement in the form of a set-top box arrangement according to the invention is generally designated by the reference numeral 10 in figure 1.

The arrangement comprises a housing 13 for a known receiver and decoder 12 (also shown in figure 3) for decoding encoded broadcast services, such as television services. The receiver and decoder 12 are connected to a conventional dish antenna 16 for receiving a down-link broadcast signal 18 from a satellite in conventional manner. The arrangement is connected to a television set 20 having a screen or monitor 21, also in well known manner.
A remote control unit (RCU) 22 for the arrangement 10 comprises a keypad 24. Infra-red signals 25 are transmitted upon manipulation of the keys on the keypad to the arrangement, to control the operation thereof, also in well known manner.

The arrangement 10 further comprises a transceiver 26 for supporting a Short Message Service (SMS) which enables a user to send and receive via the arrangement 10 a short message (SM) via a telecommunications network such as a digital cellular telecommunications network, for example the known GSM network. The transceiver 26 is similar to that of a conventional cellular phone, and is housed in the housing 13. The transceiver 26 is controlled by a master controller 28 (shown in figure 3) of the arrangement 10 as will hereinafter be described.

In other embodiments, the transceiver 26 may alternatively or in addition comprise a known public switched telephone network (PSTN) modem 30 and/or a modem (not shown) for an asynchronous digital subscriber line (ADSL). In yet other embodiments, the SM may be transmitted via a suitable transmitter such as a transmitter part of a GSM modem and a return path for SM’s received may be provided via
the television service receiver 12, for example via antenna 16 and the
associated receiver, as will hereinafter be described.

In the embodiment in figure 2, the transceiver 26 or other modems 30,
32 are located externally of the housing 13 and are connectable to the
controller 28 via a suitable serial link 34.

A more detailed block diagram of the arrangement 10 is shown in
figure 3. The master controller 28 controls both the conventional
reception and decoding of incoming received television service signals
and also executes an SMS application for enabling a user to send to a
user selectable addressee and receive from a remote contact SM’s via
the arrangement 10.

Referring first to the television services, a conventional satellite
receiver 40 for the signal 18 carrying the broadcast television services
is connected to antenna 16. In other embodiments, the receiver 40
may be substituted by a suitable terrestrial transceiver (not shown) or
a suitable cable signal transceiver (also not shown). A decoder 42 for
the encoded services is connected downstream of the transceiver 40.
The decoder is connected to the master controller in known manner.
The master controller 28 is connected to a video display output
buffer/engine 44 to provide analogue signals for driving the video monitor 21. A direct link 46 shown in dotted lines may also be provided between the decoder 42 and the buffer/engine 44.

Referring now to a receiving part of the SMS functionality, the GSM transceiver is shown at 26 in figure 3. A receive buffer 50 for incoming SM’s is connected to an output of transceiver 26. An output of the buffer 50 is connected to the master controller 28.

The transmit part of the functionality comprises a receive buffer 52 for temporarily storing text entered via an input device, such a RCU 22. An output of the buffer 52 is connected to the master controller 28. A send buffer 54 is connected to a data output of the master controller 28. An output of the send buffer 54 is connected via line 56 to transceiver 26 or alternatively in the case of terrestrial and cable applications, via line 58 to a corresponding transceiver 40.

The television service reception and decoding part operate in well known manner and will not further be described herein.

While a service has been selected, a user may want to send a SM to a user selectable addressee utilizing the set-top box arrangement 10.
according to the invention. The procedure is illustrated in figure 4. In the background and at 60, the arrangement 10 loads into a memory arrangement of master controller 28 typically via transceiver 40, an SMS-type application transmitted with the service from a remote head end. This application executes on the master controller 28 and is normally in an idle state as shown at 62.

When the user wants to send a message, an icon on a suitable menu (not shown) displayed on the screen 21 is selected as shown at 64. On selection of the icon, the master controller 28 causes at 66 a template 84 (shown in figure 7(a)) for composing the SM to be displayed on screen 21, with the selected service being displayed in the background 86. The user then utilizes the RCU 22, keypad 24 and link 25 to enter the Short-Message-Text. The template 84 may also selectively be maximized by the user to occupy the entire screen as shown in figure 7(b). The text entered is stored in buffer 52. Once the user has finished composing the text, the SMS application formats and processes the text at 68 into an SM. The master controller 28 then causes the transceiver 26 to transmit the message at 70 in real time via the conventional cellular network to the addressee.
In the case of the reception of SM’s, reference is made to figure 5. When an SM is received from a remote contact via the GSM network and transceiver 26 in known manner, the message is temporarily stored in buffer 50. At 76 in figure 5, the master controller 28 inputs the SM in the buffer 50 and the SMS application formats and processes the message for display. The master controller 28 then prompts the user at 78 and on the screen, whether the Short-Message-Text received must be displayed on the screen 21. If the user does not request display, the text is saved or stock piled in an inbox of a memory arrangement of the master controller, as shown at 80. The contents of the inbox may selectively be displayed on the screen 21 and the user may scroll through the inbox utilizing the RCU 22. The user may also select at a suitable later time to have selected text in the inbox displayed on demand on the screen 21. If the user requires display, the text is displayed at 82 superimposed on the selected service as shown at 84 in figure 7(a), alternatively in maximized form as shown in figure 7(b).

In other embodiments, the SMS application may be permanently resident in a memory arrangement of the controller 28. The application may thus be loaded or invoked by a user at any time and while watching any service or no service at all, to be executed by the
controller and not only while a service piggy-backing the application is selected.

In yet another embodiment shown in figure 6, the same communications path 90 which is used for incoming television or audio services such as DVB-RCS for satellite services and/or of DVB-RCT for terrestrial services and/or DVB-RCC for cable services may be used for outward bound text messages and inward bound text messages via a suitable interface 92 connected to the receiver/decoder 12.
CLAIMS

1. An encoded service decoder arrangement comprising:
   - a decoder for decoding encoded services;
   - the decoder being connectable to a monitor;
   - controller means cooperating with the decoder and
     running a text message service application, for formatting
     input data into a text message; and
   - means for transmitting the text message to an addressee;
   and
   - means for receiving and displaying on the monitor a text
     message received from a remote contact.

2. An arrangement as claimed in claim 1 wherein the text message
   is a short message.

3. An arrangement as claimed in claim 1 or claim 2 wherein the
   arrangement is housed in a single housing.

4. An arrangement as claimed in claim 1 or claim 2 wherein the
   means for transmitting the text message and the means for
   receiving a text message are housed in a separate housing and
   are connectable to the controller via a suitable link.
5. An arrangement as claimed in any one of claims 1 to 4 wherein the means for transmitting the text message and the means for receiving a text message comprise a GSM transceiver.

6. An arrangement as claimed in any one of claims 1 to 4 wherein the means for transmitting the text message and the means for receiving a text message comprise a public switched telephone network (PSTN) modem.

7. An arrangement as claimed in any one of claims 1 to 4 wherein the means for transmitting the text message and the means for receiving a text message comprise an asynchronous digital subscriber line (ADSL) modem.

8. An arrangement as claimed in any one of claims 1 to 4 wherein the means for transmitting the text message comprises at least a transmitter part of the a GSM transceiver and the means for receiving a text message comprises a television service receiver means.

9. An arrangement as claimed in any one of claims 1 to 4 wherein the means for transmitting the text message and the means for
receiving a text message comprise at least one of a satellite service transceiver, a terrestrial service transceiver and a cable service transceiver.

10. An arrangement as claimed in any one of claims 1 to 9 wherein the text message service application is permanently resident in a memory arrangement of the controller.

11. An arrangement as claimed in any one of claims 1 to 9 wherein the text message service application is loaded into the decoder arrangement upon selection of a service.

12. An arrangement as claimed in any one of the preceding claims wherein the text message service application is configured selectively to generate a template on the monitor for composing a message to be transmitted.

13. An arrangement as claimed in any one of the preceding claims comprising an input device for entering a message into a text input arrangement of the decoder arrangement.
14. An arrangement as claimed in claim 13 wherein the input device comprises a remote control unit cooperating with the controller.

15. A method of broadcasting encoded services, the method comprising the steps of:
   - broadcasting a computer executable text message service application;
   - enabling a user to select the application for execution on a controller of a decoder arrangement for encoded services; and
   - enabling the user to utilize the application to write text messages and to transmit the written message to an addressee and to receive and read text messages received from a remote contact.

16. A method as claimed in claim 15 wherein the application is broadcasted together with an encoded service and wherein the application is selectable by the user while the service is selected only.
17. A method as claimed in claim 15 wherein the application is permanently resident in a memory arrangement of the controller to be selected by the user, independently of a service selected.
FIGURE 3
FIGURE 4
FIGURE 6