CLAIMS:

1. A control system comprising:

means for providing a signal indicative of an error;

error correction means for correcting the error in response to the signal indicative of an error, said error correction means comprising an integrating means;

means for coupling a version of the signal indicative of an error to the integrating means, the integrating means integrating the version of the signal indicative of an error over a first response time, and

means for augmenting the version of the signal indicative of an error coupled to the integrating means for reducing the response time for the integrating means integrating the version of the signal corresponding to the signal indicative of an error from the first response time to a second response time, said augmenting means comprising coupling an additional current from an external power supply source to the integrating means in response to a parameter of the signal indicative of an error.

2. The control system of claim 1 wherein the integrating means includes an integrating capacitor and the means for augmenting the version of the signal indicative of an error includes means for providing one of current charging and discharging the capacitor responsive to the amplitude of the signal indicative of an error.

3. A tuning system for a signal receiver comprising:

means for providing a tuning signal for the tuning of the receiver in response to a signal selection;

means for tuning the receiver comprising an integrating means;

means for coupling a version of the tuning signal to the integrating means for integrating the version of the tuning signal over a first response time, and

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means for augmenting the version of the tuning signal for reducing the response time for the integrating means integrating the version of the tuning signal from the first response time to a second response time, said augmenting means comprising coupling an additional current from an external power supply source to the integrating means in response to a parameter of the tuning signal.

4. The tuning system of claim 3 wherein the integrating means includes an integrating capacitor and the means for augmenting the version of the tuning signal includes means for providing one of current charging and discharging the capacitor responsive to the amplitude of the tuning signal.

5. A tuning system for a television apparatus, comprising:

a phase detection means of a PLL for providing a tuning signal for the tuning of the apparatus in response to a signal selection;

means for tuning the receiver comprising an integrating means;

means for coupling a version of the tuning signal to the integration means for integrating the version of the tuning signal over a first response time, the integrating means comprising an integrating capacitor which is one of charged or discharged by current responsive to the tuning signal, and

means for augmenting the one of charging and discharging of the integrating capacitor responsive to tuning signal for charging and discharging the integrating capacitor over a second response time which is faster than the first response time, said augmenting means comprising coupling an additional current from an external power supply source to the integrating means in response to a parameter of the tuning signal.

INSERT NEW CLAIMS

6. The tuning system of claim 5 wherein the means for augmenting includes means responsive to the amplitude of the current of one of charging and discharging the integrating capacitor.

7. The tuning system of claim 5 wherein the means for augmenting includes means for coupling one of a sourcing current and a sinking current to the integrating capacitor to provide additional current for one of charging and discharging of the capacitor when the tuning signal provided by the phase detector exceeds a threshold value.

8. The tuning system of claim 7 wherein the one of sourcing current and sinking current is measured by sensing a voltage drop across a resistor coupled in series with the integrating capacitor.

9. The tuning system of claim 8 wherein the threshold value is determined by the threshold of conduction of a base-emitter junction of a transistor coupled across the resistor.

10. The tuning system of claim 9 wherein the voltage drop across the resistor is less than the threshold value for small tuning increments of the tuning signal.

11. The tuning system of claim 7 wherein the one of coupling of sourcing current and sinking current to the integrating capacitor is provided by a pair of complementary transistors coupled to respective polarities of the power supply source.

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FAST ACTING CONTROL SYSTEM

ABSTRACT

A more rapid charging of an integrating capacitor (18) of a PLL is provided when large frequency changes are desired. In one embodiment, the phase locked loop (PLL) circuit (10) sinks or sources current to charge or discharge the integrating capacitor (18). A threshold voltage proportional to a current through the capacitor turns on a circuit which sinks or sources more current of the proper polarity to the integrating capacitor (18) from an external source (+Vcc, -Vcc) until a PLL lock is achieved. Once the lock is achieved, if a small correction current is required by the PLL, the small correction current is below a threshold required to actuate the augmenting circuit (Q1, Q2, 20, 36), and the PLL loop behaves in the usual manner as if the augmenting circuit (Q1, Q2, 20, 36) were not present. In another embodiment, the integrating capacitor (18) is reduced in value by switchably connecting a second capacitor (40) in series with the integrating capacitor (18) so that the total reduced capacitance of reduced value can be charged more quickly.

Fig 4