CLAIMS

1. Optoelectronic device (OD) comprising a photodetection means (PDM) arranged for converting first and second complementary optical signals into first and second complementary currents, and a processing means (PM) arranged for processing said first and second complementary currents to output at least a first output voltage (V1), wherein said processing means (PM) comprises i) a conversion means (CM) arranged for separately converting said first and second complementary currents into first and second operating voltages, ii) a balancing means (BM) arranged for balancing phase and amplitude of said first and second operating voltages, and iii) a differential amplification means (DAM) arranged for applying a subtraction function to said first and second operating voltages with balanced phase and amplitude to produce at least said first output voltage (V1), which is proportional to the difference between said first and second operating voltages with balanced phase and amplitude.

2. Optoelectronic device according to claim 1, wherein said conversion means (CM) comprises first (TA1) and second (TA2) independent trans-impedance amplification means arranged for converting respectively said first and second complementary currents into said first and second complementary operating voltages.

3. Optoelectronic device according to any one of claims 1 and 2, wherein said balancing means (BM) comprises i) first (PAA1) and second (PAA2) independent phase and amplitude adjustment means arranged for adjusting respectively the phase and amplitude of said first and second operating voltages as a function of control signals, and ii) a phase and amplitude error detector (ED) arranged for comparing the phases and amplitudes of said first and second operating voltages with balanced phase and amplitude, outputted by said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means, to determine phase and amplitude imbalances, and for producing said control signals representative of phase and amplitude adjustments to be carried out by said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means to compensate

for said determined phase and amplitude imbalances.

4. Optoelectronic device according to claim 3, wherein each of said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means comprises a variable delay means arranged for adjusting said phase, and a variable gain means arranged for adjusting said amplitude.

5. Optoelectronic device according to one of claims 3 and 4, wherein said phase and amplitude error detector (ED) comprises a phase comparator comprising an XOR means arranged for applying an XOR logical function to said first and second operating voltages with balanced phase and amplitude, and an amplitude comparator comprising a peak detector and a differential amplifier arranged for comparing the amplitudes of said first and second operating voltages with balanced phase and amplitude.

6. Optoelectronic device according to any one of claims 1 to 5, wherein said photodetection means (PDM) comprises first (PD1) and second (PD2) independent photodiodes (PD1, PD2) arranged for converting respectively said first and second complementary optical signals into said first and second currents.

7. Optoelectronic device according to any one of claims 1 to 6, wherein said differential amplification means (DAM) is arranged for outputting a second output voltage (V2) which is complementary of said first output voltage (V1).

8. Optoelectronic device according to any one of claims 1 to 7, wherein it constitutes a differential photoreceiver.

CLAIMS

1. Optoelectronic device (OD) comprising a photodetection means (PDM) arranged for converting first and second complementary optical signals into first and second complementary currents, and a processing means (PM) arranged for processing said first and second complementary currents to output at least a first output voltage (V1), wherein said processing means (PM) comprises i) a conversion means (CM) arranged for separately converting said first and second complementary currents into first and second operating voltages, ii) a balancing means (BM) arranged for balancing phase and amplitude of said first and second operating voltages, and iii) a differential amplification means (DAM) arranged for applying a subtraction function to said first and second operating voltages with balanced phase and amplitude to produce at least said first output voltage (V1), which is proportional to the difference between said first and second operating voltages with balanced phase and amplitude; wherein said operating voltage is a voltage having a value comprised within normal operation voltage values and wherein balancing phase and amplitude of an operating voltage comprises adjusting respectively a phase and an amplitude of said voltage as a function of a respective control signal.

2. Optoelectronic device according to claim 1, wherein said conversion means (CM) comprises first (TA1) and second (TA2) independent trans-impedance amplification means arranged for converting respectively said first and second complementary currents into said first and second complementary operating voltages.

3. Optoelectronic device according to any one of claims 1 and 2, wherein said balancing means (BM) comprises i) first (PAA1) and second (PAA2) independent phase and amplitude adjustment means arranged for adjusting respectively the phase and amplitude of said first and second operating voltages as a function of control signals, and ii) a phase and amplitude error detector (ED) arranged for comparing respective phases of said first and second operating voltages with the balanced phase and

respective amplitude of said first and second operating voltages with the balanced amplitude, outputted by said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means, to determine phase and amplitude imbalances, and for producing said control signals representative of phase and amplitude adjustments to be carried out by said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means to compensate for said determined phase and amplitude imbalances.

4. Optoelectronic device according to claim 3, wherein each of said first (PAA1) and second (PAA2) independent phase and amplitude adjustment means comprises a variable delay means arranged for adjusting said phase, and a variable gain means arranged for adjusting said amplitude.

5. Optoelectronic device according to one of claims 3 and 4, wherein said phase and amplitude error detector (ED) comprises a phase comparator comprising an XOR means arranged for applying an XOR logical function to said first and second operating voltages with balanced phase and amplitude, and an amplitude comparator comprising a peak detector and a differential amplifier arranged for comparing the amplitudes of said first and second operating voltages with balanced phase and amplitude.

6. Optoelectronic device according to any one of claims 1 to 5, wherein said photodetection means (PDM) comprises first (PD1) and second (PD2) independent photodiodes (PD1, PD2) arranged for converting respectively said first and second complementary optical signals into said first and second currents.

7. Optoelectronic device according to any one of claims 1 to 6, wherein said differential amplification means (DAM) is arranged for outputting a second output voltage (V2) which is complementary of said first output voltage (V1).

8. Optoelectronic device according to any one of claims 1 to 7, wherein it constitutes a differential photoreceiver.