



Universitatea „Ștefan cel Mare” din Suceava



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Faculty of Electrical
Engineering and
Computer Science



DYNAMICALLY ADJUSTABLE SUNSHADE SYSTEM FOR VEHICLE WINDSHIELDS

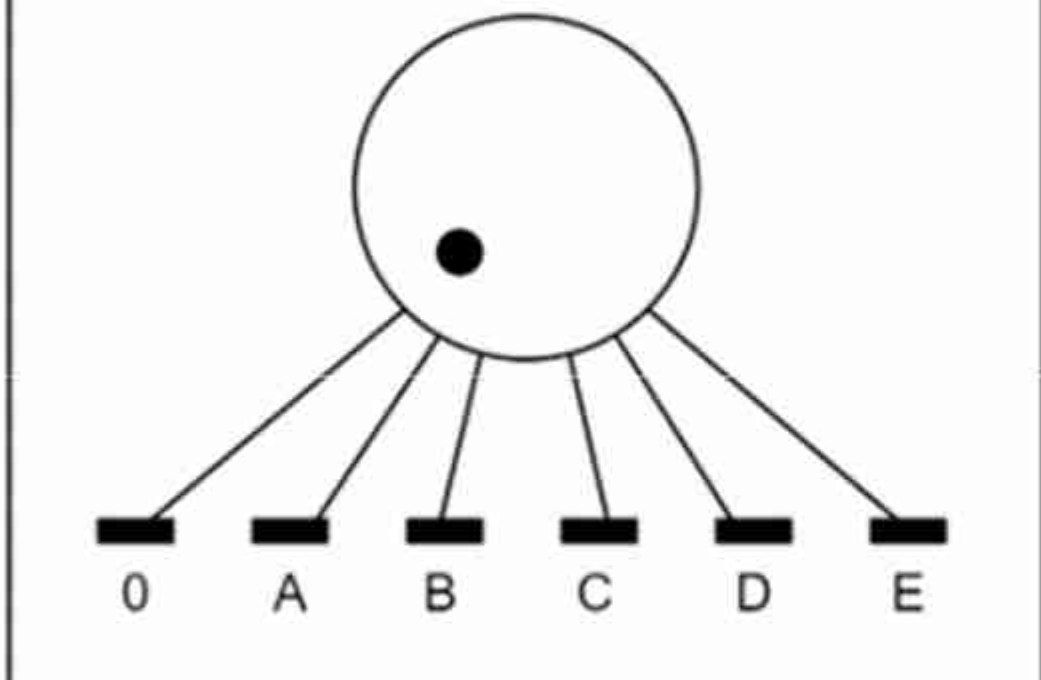
Ciprian BEJENAR, Alexandru LEONTE, Laurențiu Dan MILICI,
Andrei Emanuel PASCAN, Mihai DIMIAN, Daniela IRIMIA,
Constantin UNGUREANU, Ciprian AFANASOV

The sunshade system with dynamic adjustment for vehicle windshields involves gradually controlled shading, in the vertical plane of the windshield, by progressively powering the elements arranged in layers in a package of films, transparent when not powered and opaque when powered, both manually, depending on the user's wishes, and automatically, depending on the elevation angle of the sun and the vehicle relative to the horizontal plane, so as to provide a distinct alternative for creating sunshades next to the vehicle windshield.

Advantages:


- ❑ The system introduces new possibilities for the creation of sunshades with dynamic and progressive adjustment for vehicle windshields;
- ❑ The system preserves the chromatic range of colors perceived in the transparent state;
- ❑ The system produces a zonal shading effect in overlapping steps;
- ❑ The system can be adjusted effortlessly, depending on the elevation angle of the sun and the vehicle;
- ❑ The system increases road safety by being able to be applied to any windshield of a vehicle, train, flight system or watercraft with passengers;
- ❑ The system does not lose its properties due to wear and tear and does not require maintenance.

Button for control and command



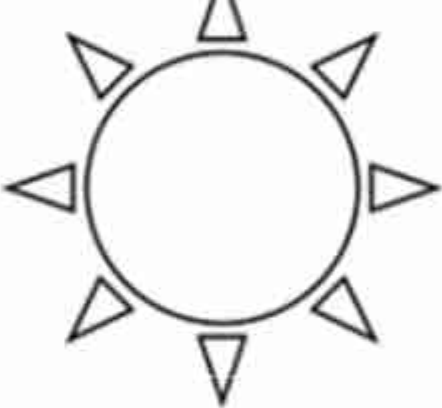
Electronic command

Package of films with liquid crystals dispersed between conductive polymer salts



Electrical control and command


Sun altitude angle sensor



Electronic control


Computer for control and command

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HYBRID SOLAR SYSTEM WITH AUTOMATIC ADJUSTMENT

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Laurențiu-Dan MILICI, Pavel ATĂNĂSOAE

Hybrid solar system with automatic adjustment, according to the invention, features an assembly consisting of solar panels intended for the production of electricity and heat, joined through thermo-mechanical actuators and elastic parts, which is why, the system supports the adaptive modification of the shape and operating regime, without external intervention, so that, in summer the production of electrical energy is facilitated, in winter the production of thermal energy is facilitated, and in spring and autumn it allows the simultaneous production of electricity and heat.

Advantages:

- ❑ The system introduces new possibilities for the hybrid production of electricity and/or heat, respectively, for adjusting the operating regime of solar systems, due to the nature of its dynamic construction;
- ❑ The system covers the various needs of supplying electricity and/or heating, through its constructive form, because it alternately exploits the solar panels intended for the production of electrical energy;
- ❑ The system avoids overheating of solar panels intended for the production of thermal energy, because it is driven automatically, and the control process is autonomous, which does not require additional energy;
- ❑ The system features actuation elements that do not require special maintenance.



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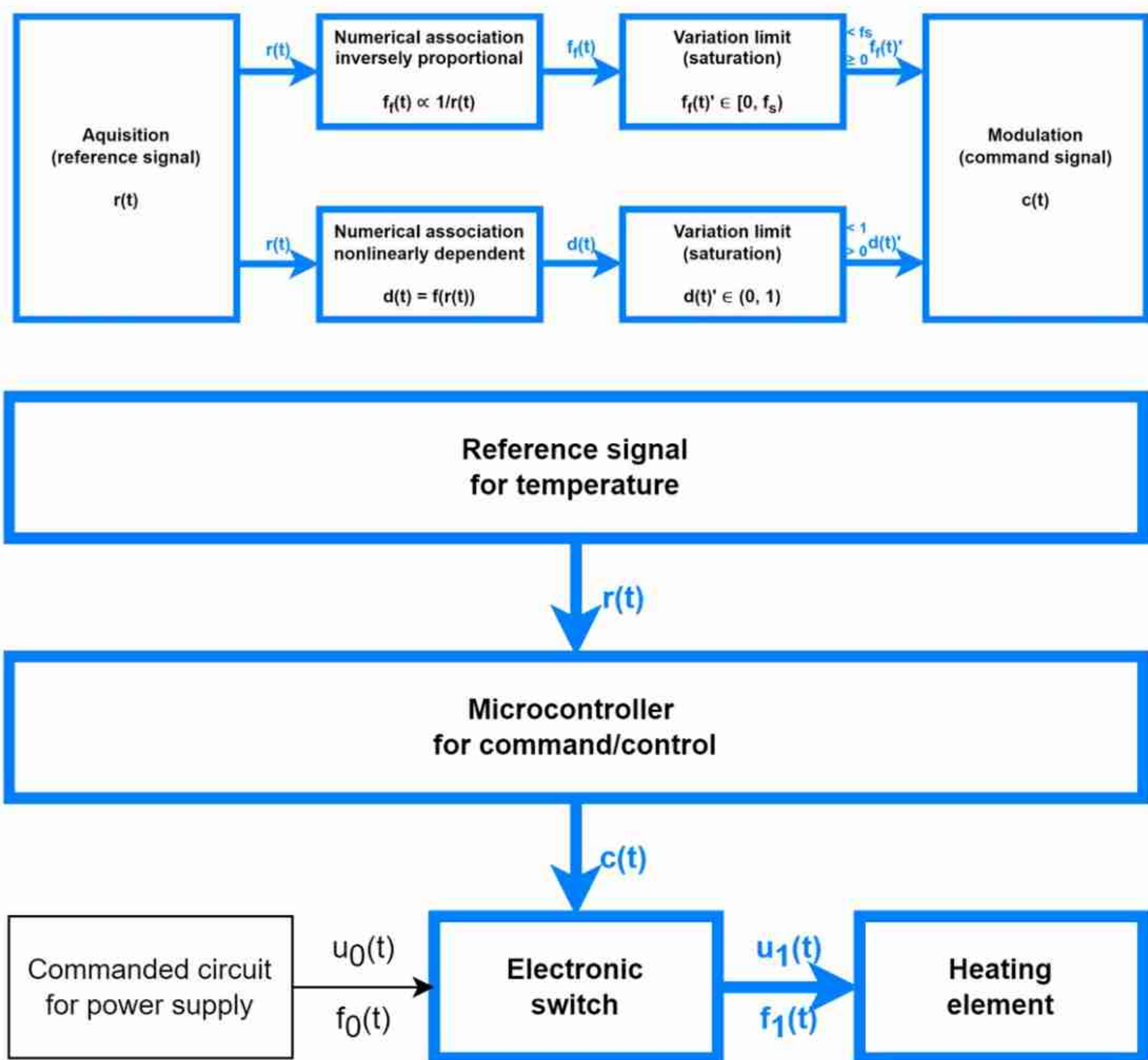
METHOD AND SYSTEM FOR INCREASING HEATING POWER

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Method and system for increasing heating power, according to the invention, features a strategy and a digital command/control path, of the direct current passed through non-ideal heating elements, of the resistive-inductive (RL) type, based on a pulse modulation technique, to modify the effective value of the electric current without varying the amplitude of the electric voltage, which improves the regulation linearity of the systems that implement it.

Advantages:

- ❑ The method and system introduce new digital command/control possibilities for increasing the heating power of non-ideal heating elements;
- ❑ The method and system do not require any additional electrical equipment/electronic conversion devices, or other electrical heaters and/or switching devices than those available;
- ❑ The method and system allow the modification of the effective value of the electric current without varying the amplitude of supply electric voltage;
- ❑ Method and system improve power regulation linearity of non-ideal direct current electric heaters.



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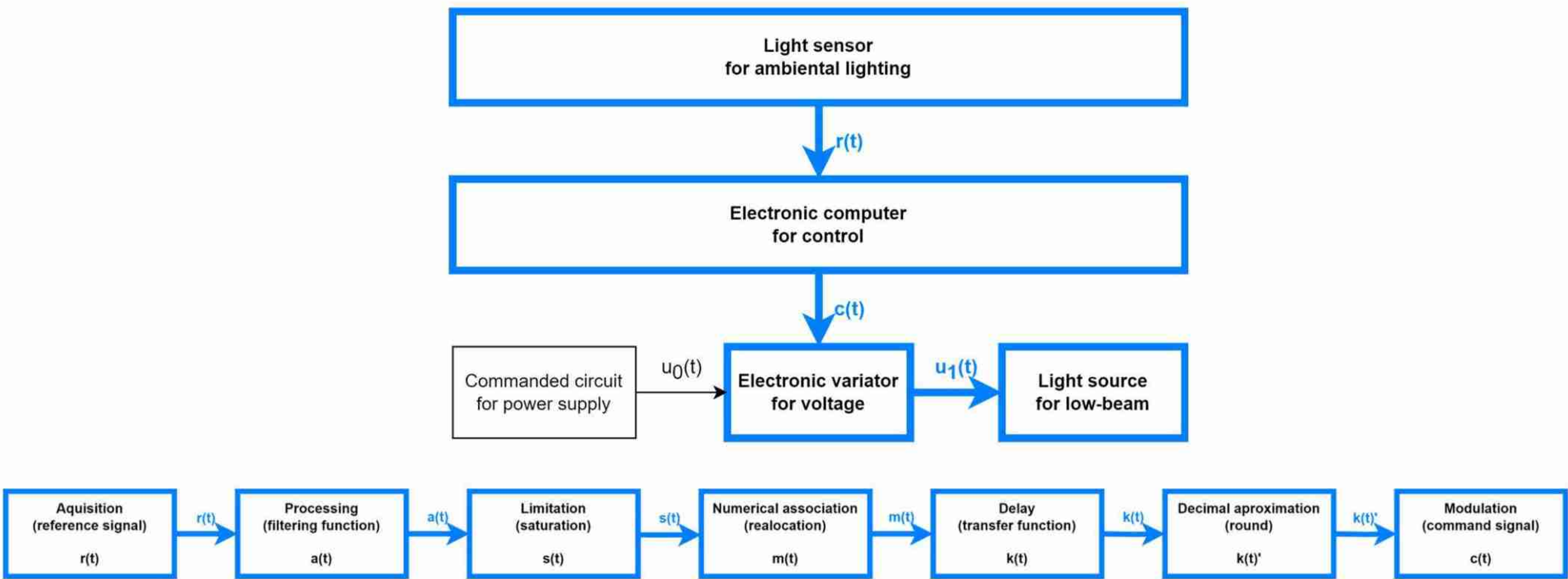
SYSTEM FOR SAVING LOW-BEAM LIGHT SOURCES AND METHOD FOR ADJUSTMENT

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Laurențiu-Dan MILICI, Ștefan-Bogdan DULGHERU,
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System for saving low-beam light sources and method for adjustment, according to the invention, features the completion of the electrical circuit for powering adjustable low-beam lamps, so that it allows for fine and precise limitation of the electrical power supply depending on the external light, to extend the life of existing light sources and eliminate daytime running lights, while ensuring maximum visibility among traffic participants, in any driving condition that requires the use of the low-beam of equipped vehicles.

Advantages:

- ❑ The system and method introduce new possibilities for increasing the lifespan of vehicle lamps dedicated to low-beam, in the presence of outdoor ambiental light;
- ❑ The system and method are adjacent to the electrical circuits and low-beam light sources already existing in the vehicle equipment, saving of electrical energy and/or fuel of vehicles, because it reduces the electrical power consumed by the powered light sources;
- ❑ The system and method ensure maximum visibility among traffic participants, because it does not perceptibly alter the luminous flux emitted by the affected light sources, ensuring a constant level of runway illumination, under variable external ambiental light conditions.



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