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Active control

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Normal operation

LCU is connected to 2 sensors via RS-485. A sensor provides current light intensity level and sensor temperature data to the LCU. Active control aims to keep lighting level constant by variating PWM output levels between minimum and maximum according to values received from light sensors and in relation to a configured setpoint.

Setpoints have positive tolerance in order to always provide at least the desired light output. Downward ramp stops once sensor reading is within setpoint’s predefined tolerance limit.

During light sensors calibration, the setpoint values are updated when a PWM value allows to reach a targeted lux value observed with a lux meter. For example set-point value could be calibrated to 200 lux when vehicle is in total darkness. Setpoint values differ between each section type as each section type has a unique lighting environment. Objects and materials such as windows, interior decor etc... affect the lighting environment.

Control mode

Used control mode is Follow smallest.

Smallest sensor value within a car will be used to determine lighting intensity within the car.

Sensors

Sensors used with active control are TSA0002.

Refer to TSA0002 SwRS for more details about the sensor.

Possible faults

Sensor values 20 and 950 are determined to be invalid and are excluded from active control. Active control is halted in case all sensors are producing invalid values below 20 or below 20 and above 950. In case all sensors are producing values over 950, they are in direct sunlight and are determined as invalid, the active control ramps down the lights due to excessive external light.

If connection to all sensors is lost – Scenario Default is used.

Active control with one sensor

Communication with the light sensors are monitored constantly. If one of the light sensors is lost to communication error or providing values out of range the LCU will run active control with one sensor.

Light sensor limits will be configured during implementation phase.



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