ALARIS KUHNE
INSPIRING THE NEXT RF SOLUTION

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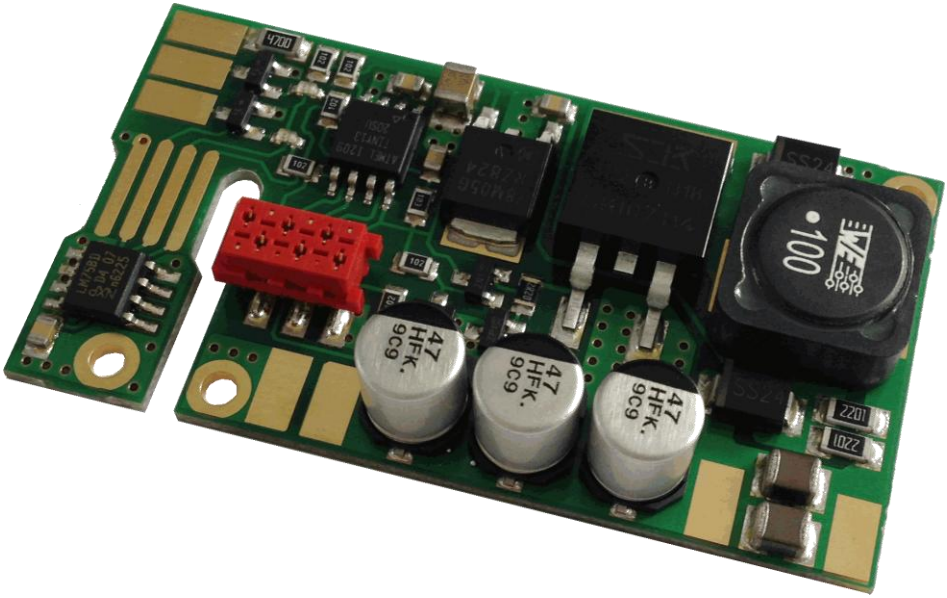
V 1.0

KU LS2 PWM

Universal PWM Fan Controller



Manual

Reg no: HRB 3350 Hof, VAT-ID-No: DE 813343044

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A DIVISION OF ALARIS THE RF TECHNOLOGY GROUP

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Specification

Type **KU LS2 PWM**

Switching frequency (PWM)	typ. 18 kHz
Power rating	max. 3 A
Supply voltage	+12 ... 28 V DC
Current consumpt. (standby)	typ. 30 mA
Alarm output	power rating max. 20 mA
Connectors	solder pads
Dimensions (mm)	typ. 44 x 35 x 10
Weight	typ. 15 g

Description

The **Universal PWM Fan Controller KU LS 2 PWM** is designed for professional and semi-professional applications. It controls the power / speed of the fans in accordance to the measured temperature. Multiple fans of the same type can be used in parallel.

The digital temperature sensor works with a precision of +/- 1 °C and can be operated remotely. The fans are controlled by a pulse width modulation (PWM) with a switching frequency of typ. 18 kHz. Most off-the-shelf fans (incl. those with integrated electronic circuitry) in the supply voltage range of 12 ... 28 V DC can be used. Please notice the specifications of the manufacturer!

Function

The KU LS2 PWM contains no voltage regulator and must be supplied in the specified voltage range of the used fans. This allows to control most off-the-shelf fans (incl. those with integrated electronic circuitry) in accordance to the actual temperature. The fans are controlled by a pulse width modulation (PWM). When supply voltage is applied the processor is activated and the communication with the temperature sensor is started.

Depending on the measured temperature the duty cycle of the PWM is calculated and changed. The start temperature is 25 °C and the maximum power is reached at 50 °C. If the temperature exceeds 55 °C the alarm output „Alarm 1" is activated and can be used for any purposes.

An second Alarm output is active „Alarm 2" if the temperature exceeds 65 °C.

Features
- Easy integration and wiring due to the compact design
- High efficiency (no linear voltage regulator – no additional heat)
- Energy saving with power management
- Direct temperature monitoring and exact switching points
- Two Alarm output's in case of temperature excess
- Reduction of noise disturbance
- Open-Collector outputs

Applications
- Communication systems
- Measurement and laboratory equipment

CE

Fulfilled Standards
- EMC directive 2014/30/EU
- Low voltage directive 2014/35/EU
- RoHS directive 2011/65/EU

Additional protection against moisture is essential in case of outdoor installation.
Installation in a waterproof case is recommended.

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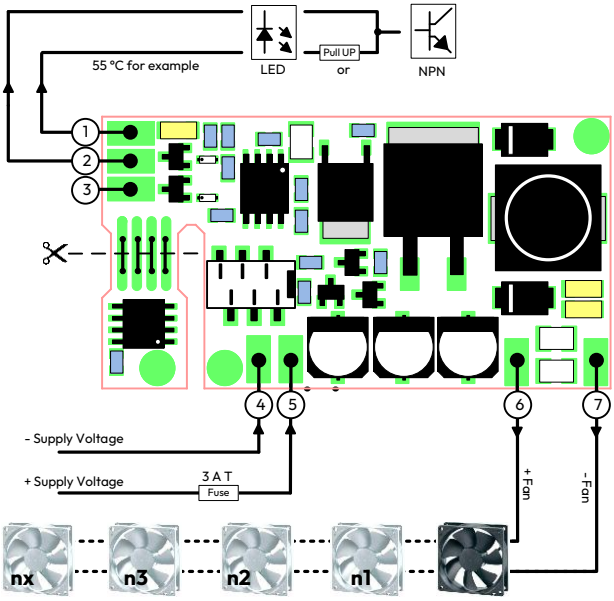
Pin assignment

1) 5 V (power rating for LED max. 30 mA
2) Alarm (open collector) switches @ typ. 55 °C max. 20 mA
3) Alarm (open collector) switches @ typ. 65 °C max. 20 mA
4) GND
5) Supply voltage (+12 ... 28 V DC)
6) Fan +
7) Fan -



Supply voltage: Connect pin 5 to supply voltage (+12 ... 28 V DC) and pin 4to ground (GND).
Fan(s): Connect pin 6 to plus and pin 7 to GND (avoid reverse connection!). Multiple fans can be operated in parallel. Further information (polarity, suitability, supply voltage, pin assignment) must be found in the datasheets of the manufacturer of the fan. The specified output current of 3 A mustn't be exceeded!
Pin 1 provides 5 V DC via a series resistor of 470 ohms to operate a LED between pin 1 and 2/3. A maximum current of 30 mA can be drawn from this pin! This is no supply voltage for any other devices at all!
Pin 2 and 3 is an open collector and is switched to GND if the measured temperature exceeds 55 °C (2) and 65 °C (3).

Any voltages must be switched off when working on the PCB!
The temperature sensor can be cut off (as shown above) and operated remotely. This must be done very carefully to not damage peripheral components. Then the connection between main PCB and temperature sensor must be done with twisted wires or ribbon cable. The length mustn't exceed 1 m and mustn't be located in electromagnetic fields. An adequate thermal connection of the termperature sensor provides good functionality.

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Notes