AVT-EMVLED-024/040
AVT-EMVTLED-070

LED light and driver for EMC halls and measuring cabins, as well as for all environments with special electromagnetic requirements (emission and interference immunity)

2 up to 3 lights connected
To one AVT LED driver

Data sheet

ENGLISH

Content

1. General information

The EMC-resistant, dimmable (optional) and low-emission LED lights and drivers are the ideal LED lighting system for EMC and test labs, as well as generally interference-sensitive environments. With a wide performance range, very high color rendering quality and low heat generation, this LED lighting system already stands out from the conventional mass of LED lamps.

The **AVT EMC lighting family** is characterized by the following essential features:
- LED lights or spotlights for EMC laboratories, test fields and general environments
- selectable power, depending on application (8 to over 200 W)
- different number of LEDs depending on power (1, 4, 16, 32 power LEDs)
- minimal EMC interference from the luminaire, including the power supply (driver)
- Driver can be installed inside or outside the EMC equipment
- very high color rendering value Ra (CRI) of 90… 97 typ.
- high luminous flux 850 lm to over 25,000 lm per luminaire
- high efficiency, thus lower heat load (110... 135 lm/W)
- Supply voltage driver: 230 V/ 50 Hz
- Supply voltage luminaire: 31... 36 V
- the drivers and LED lights are specially matched to each other and should not be used separately without consultation with the manufacturer
- developed and manufactured in Ilmenau, Germany

The following requirement options can be selected for the **AVT-EMVLED-024/040**
- Power: 24... 40 W (depending on lamp number on one driver)
- Luminaire with 4 LEDs (2x2)
- Light color: 2700 K, 3000 K, 4000 K (Ra = 97), 5000 K and 6500 K on request
- Opening angle of the reflectors: 15°, 30°, 40° and 80°.
- different housing colors possible (black as standard)

The following features and variants are relevant for the driver **AVT-EMVTLED-070**:
- Operation of the LED luminaires by EMC-proof and especially low-emission drivers
- Driver can be installed inside or outside the EMC equipment
- optionally dimmable: 10 % to 100 %
- Cabling as fixed installation or as 230 V cable with plugs and sockets for LED cabling
- EMC hardened up to **100 V/m** (optional higher)

Additional services:
- Cable extensions for LED luminaires
- installation services
- Planning and lighting calculations
- EMC-proof camera system with 4K resolution (3840 x 2160)
- EMC-proof thermal camera (7… 14 µm)

2. Safety regulations

This data sheet contains information and warnings which must be observed in order to operate the devices in a safe condition. In particular, the technical connection conditions must be observed. The measures to be observed are summarized below:

- The driver and the lamp must not be switched on if they are damaged and should not be operated under conditions of increased humidity.
- For the correct and safe use of these devices, it is important that both operating and service staff follow generally accepted safety procedures in addition to the safety precautions specified in this manual.
- If safety protection is likely to be compromised, the driver must be taken out of service and secured against accidental operation. Qualified maintenance or repair personnel should be informed. Safety protection is likely to be compromised if, for example, the driver shows visible damage or does not function normally.
- These devices are not designed and should not be used for medical purposes.
- The driver must be used with a protective earth connection through the power cable conductor. Connecting the driver to a working grounding system using the supplied cable will ensure this.
- The switch on the front of the driver disconnects the power supply to the device.
- Make sure that the voltage and frequency (50 Hz) values on the driver are not exceeded.
- The driver may only be opened by persons or companies authorized by the manufacturer. The following applies to all users: **Do not open the devices!** The EMC properties are then no longer given.
- The output voltage of the driver is max. 95 V (no-load); under rated load it is limited to 35 V. The LED light has a maximum input voltage of 36 V.
- A permanent load above the nominal values and a short-term load above the limit values of the driver and luminaire are not permitted. This can lead to overheating and destruction of the devices.
- Sufficient stability of the supplying mains (230 V AC) is required. Instabilities or disturbances of the mains voltage are manifested by flickering of the light.
- No voltages or currents should be applied to the electrical outputs of the devices.
- Ensure enough cooling for operation of the devices. Flammable or easily inflammable materials or structures must be kept at a distance (e.g. absorbers). A temperature of 25° above the ambient temperature can be assumed for the LED light and a temperature of 38° above the ambient temperature for rated operation and normal cooling conditions (no forced cooling required) can be assumed for the driver (vertical mounting as in picture).
- The device has the climate class IP20 and should be operated in a clean, dry environment with an ambient temperature between 0° C and +35° C and a maximum altitude of 2000 m above sea level.
- Do not drop, knock or shake the unit. Rough handling may damage internal components.
- The device must not be operated in hazardous areas.
- The LED luminaire is classified in accordance with 2006 IEC 62471 (2006 "Photobiological safety of lamps and lamp systems") into the risk classes Exempt Group (no hazard) to Risk Group 1 (low risk). This is in particular due to the low UV and blue component in the spectrum. For the optional LED color temperatures 5000 K and 6500 K, these blue components are higher and can be classified as Risk Group 2 (moderate risk). Irrespective of the classification, a direct view into the luminaire should be avoided.

- The drivers and LED lights are specially matched to each other and should not be operated separately without consulting the manufacturer.
- Ensure that the lights are mounted sufficiently securely for their weight. A solid ground is the necessary prerequisite for this.
- If used for purposes other than those for which it is intended, the manufacturer's approval must be obtained.
- Used electronic devices are recyclable materials and do not belong in household waste. If the device has reached the end of its service life, dispose of it in accordance with the applicable legal regulations at the collection points of the disposal system or return it to the manufacturer.

3. Technical specificationen

Farbtemperatur[1]	**2700 K**	**3000 K**	**4000 K**
LED lights AVT-EMVLED-024/040			
Efficiency typ.	110… 128 lm/W	115… 133 lm/W	115… 135 lm/W
Luminous flux at operating conditions	2640… 5120 lm	2760… 5320 lm	2760… 5400 lm
Center of CIE1931 diagram x	0,4577	0,4339	0,3818
Center of CIE1931 diagram y	0,4098	0,4032	0,3796
Color rendering index Ra / CRI-Wert typ.	90… 97 (other color temperatures divergent)		
Nominal power LED	49 W		
Operating power [2,3]	24… 40 W		
Absolute max. power LED[4]	140 W		
Nominal voltage of the light	34 V		
Length	160 mm		
Width	130 mm		
Height without / with retaining bracket	75 / 165 mm		
Weight	1,5 kg		
Connection	Shielded cable with 4 pole plug screwed, Fixed installation as option		
Length of cable	2 m, different length as option		
Overtemperature over ambient (at operating conditions) typ.	20 deg.		
Temperature	Operating: 0...40°C, storage: -25...+70°C		
Air humidity	0..80% non-condensing		

Reflectors	**S**	**M**	**W**	**XW**
Opening angles	15°	30°	40°	80°
Efficiency of reflectors	95%			

Driver of lights AVT-EMVTLED-070 for connection of 2 or 3 EMVLED-24/40	
Nominal power of driver on connected LED light	70 W
Input voltage	220..240 VAC
Frequency of input voltage	50 (60 Hz as an Option)
Switching element	Switch with disconnection of power supply / no standby
Fuse	6,3 A slow blow outside
Input connection	cable 1,5 m with cold-device plug, cable of fixed installation as option
Nominal output voltage	34 V
Maximal output voltage	95 V
Output connection[5]	2 or 3 plugs 4 pole screwable or fixed cable bushings to the light
Overtemperature over ambient (at operating conditions) typ.	38 deg.
Length without / with retaining bracket	150 / 180 mm
Width	130 mm
Height	75 mm
Weight	3,9 kg
Temperature	Operating: 0...35°C, storage: -25...+70°C
Air humidity	0..80% non-condensing

Annotations

[1] also 5000 K and 6500 K available, but Ra / CRI > 80

[2] operating with driver EMVTLED-070: 70 W; with larger driver higher performance

[3] dimmable on driver as an option (10%... 100%)

[4] damage of the LED with higher power,
between nominal and maximum power, severe overheating of the light may occur and must be avoided.

[5] without connected light close with dummy screw fitting

4. Description of the characteristics

The spectral behavior of the LED luminaire for different color temperatures is shown in Figure 1. Due to the low blue component, a color rendering value Ra/CRI of 97 is possible.

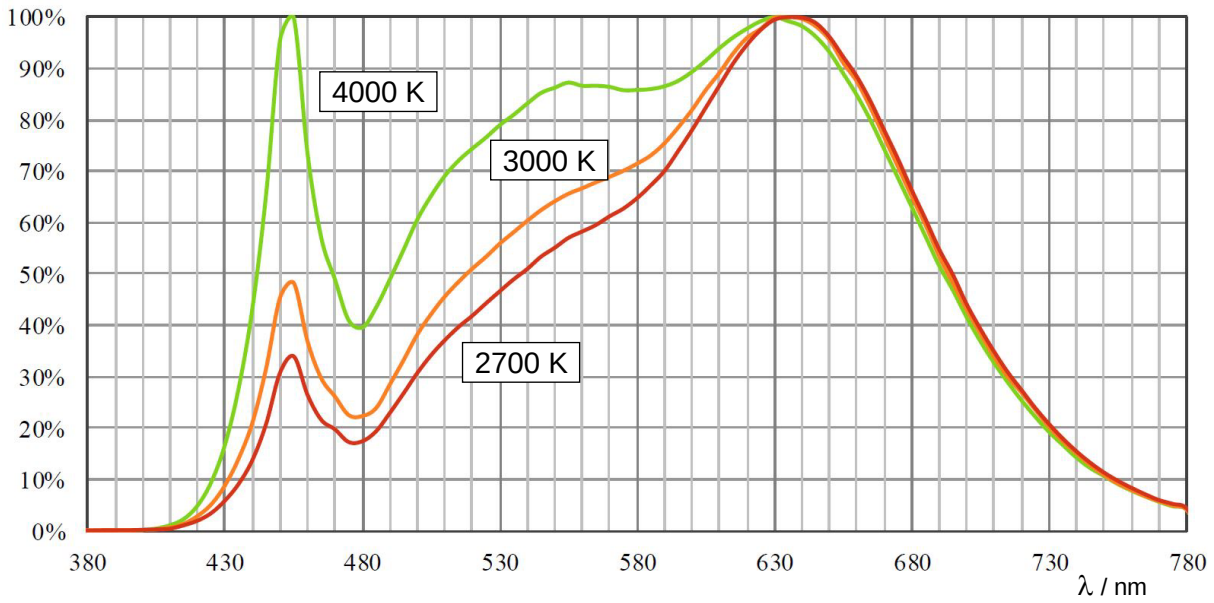

Figure 1: Percentage spectral radiation of the LED variants

The most important characteristic for this lighting application is the emitted electromagnetic spectrum. Since special attention was paid to the lowest emission of electromagnetic energy in the development of this lighting, the interference voltage limits according to standards EN 55015 and EN 61547 are considerably undercut (Fig. 2).

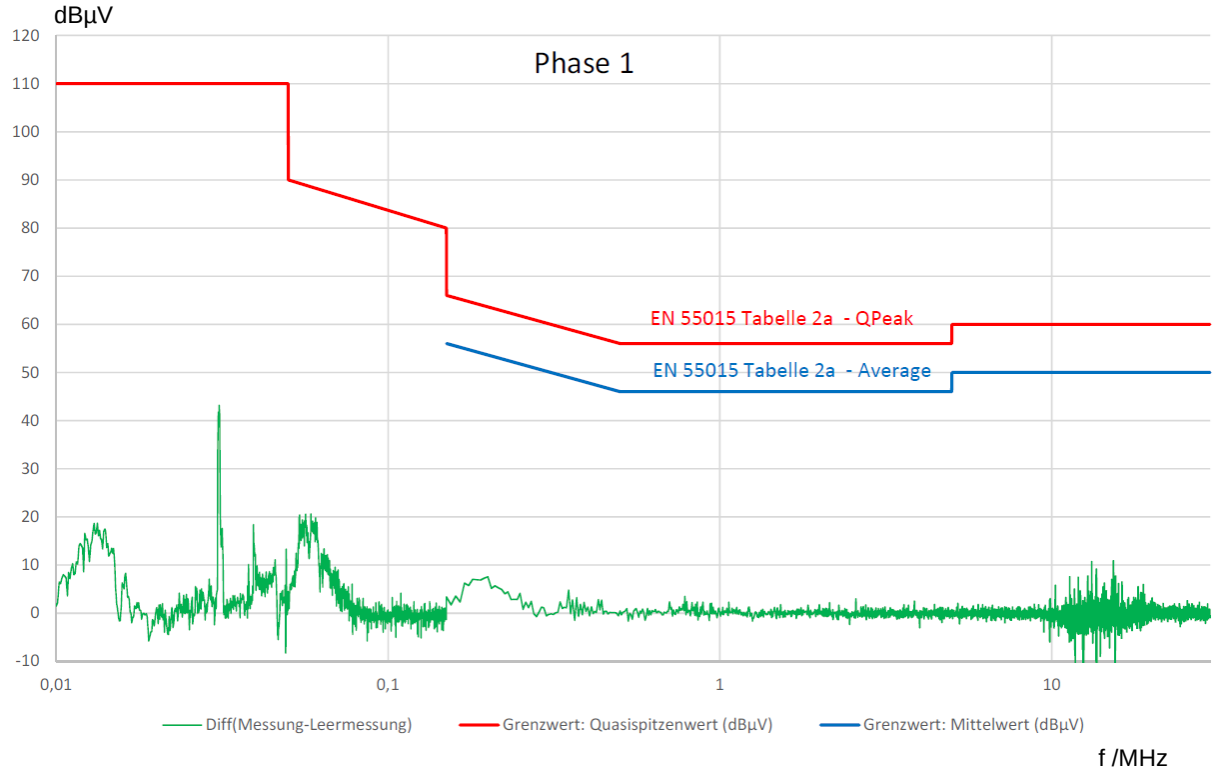

Figure 2: Example of interference voltage at full load according to EN 55015 and EN 61547

Since the measured values for the measurement are at the noise limit, the values were calculated in Figure 2. Figure 3 shows the calculation of the values by measurements with lights and empty measurements, as well as the difference formation for Figure 2. The differences between full load and optional dimming of the lights by the driver are minor. Further measurement data can be requested.

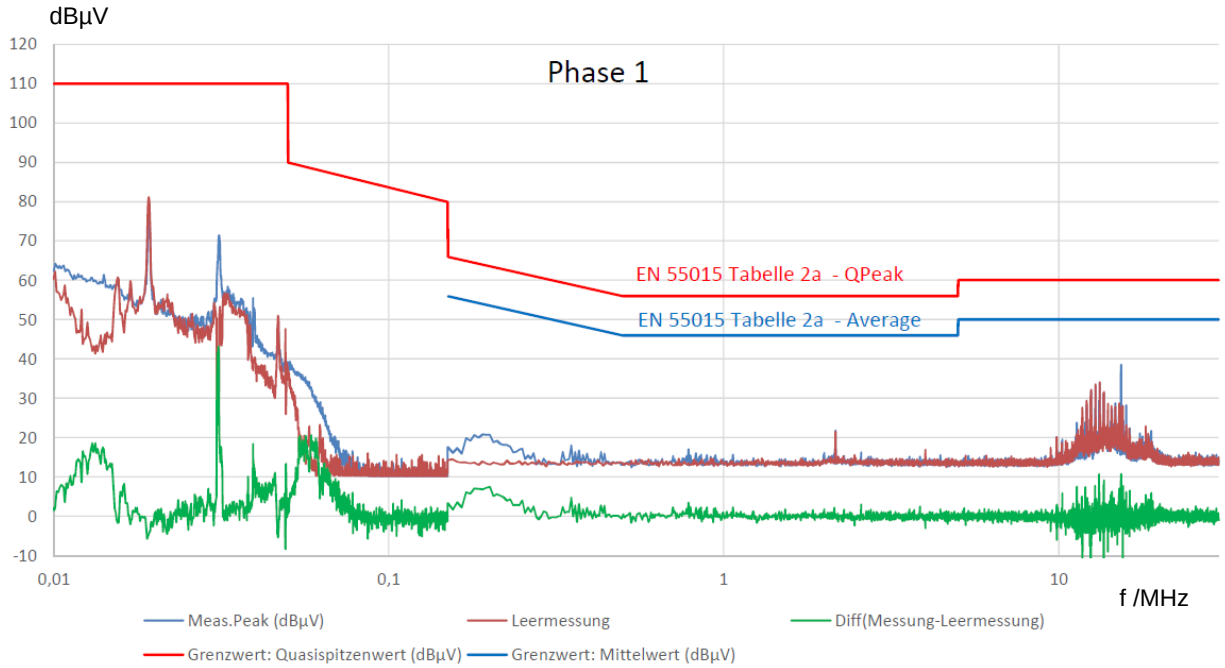

Figure 3: Calculation of the values in Figure 2 by measurements with lights and empty measurements

Applicable standards for these devices are:

EN 55015.2013/A1:2015
EN61547:2009
EN61000-3-2:2014
EN61000-3-3:2013
Directive 2014/30/EU

5. Final remarks

The information contained in this data sheet is subject to change without notice.

AVT GmbH is not liable for technical or editorial errors, for incidental or consequential damages resulting from the delivery, performance or use of the data sheet.

All information in this data sheet corresponds to the current state of the art and does not represent any assurances. We reserve the right to make changes in line with technical progress.