



product details

PRO MR 16 20 36; 930 adv



Product description: PRO MR 16 20 36; 930 adv ¹⁾
Product code: 4008321972095
Quantity: Folding carton box (FS) contains 1 Piece (PCE)

You can find this product in the eCatalog:
http://catalog.myosram.com?~language=EN&~country=GB&it_p=4008321972095

| Capabilities | |
|---|----------------------|
| Dimmable | Yes |
| Country specific categorizations | |
| ILCOS | DRR-5-12-GU5,3-50/36 |
| Additional product data | |
| Base (standard designation) | GU5.3 |
| Colors & materials | |
| Rated lamp mercury content | 0.0 mg |
| Mercury-free | Yes |
| Electrical data | |
| Rated wattage | 5 W |
| Nominal wattage | 5 W |
| Nominal voltage | 12 V |
| Claimed equiv. conventional lamp power | 20 W |
| Rated number of switching cycles | 100000 |
| Rated power factor λ | 0.95 |
| Operating frequency | 50...60 Hz |
| Dimensions & weight | |
| Overall length | 46.0 mm |
| Diameter | 50.0 mm |
| Outer bulb | MR51 |
| Lifespan | |
| Nominal lamp life time | 30000 h |
| Rated lamp life time | 30000 h |
| Light technical data | |
| Beam angle | 36 ° |
| Luminous intensity | 500 cd |
| Nominal luminous flux | 210 lm |
| Rated luminous flux | 210 lm |
| Rated color temperature | 3000 K |
| Rated color rendering index Ra | 90 |
| Rated starting time | 0.2 s |
| Rated warm-up time (60 %) | 0 s |
| Lumen main.fact.at end of nom.life time | 0.70 |



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| Packaging units | | | | |
|------------------------|---------------------------------------|-------------------------------------|---------------------|------------------|
| Product code | Packaging type and content | Dimensions in h x w x l | Gross weight | Volume |
| 4008321972095 | Folding carton box contains 1 Piece | 52,000 mm x 52,000 mm x 53,000 mm | 52,000 g (0,000 g) | 0,143 Cubic dec. |
| 4008321972101 | Shipping carton box contains 10 Piece | 114,000 mm x 71,000 mm x 271,000 mm | 670,000 g (0,000 g) | 2,193 Cubic dec. |

Product features

- Professional LED lamp
- Dimmable (Advanced versions)
- High color consistency
- Base: GU5.3
- Lifetime: up to 40,000 h
- Mercury free lamp

Product benefits

- Very low energy consumption
- Extremely long life
- No UV and near-IR radiation in the light beam
- Shockproof and vibration-proof
- Efficient generation of white light

Areas of application

- As a downlight for marking walkways, doors, stairs, etc.
- Exhibitions, department stores
- Outdoor use in outdoor luminaires only (minimum IP65)
- Directional light sources
- Museums
- Hospitality
- Shops

Equipment / Accessories

- Equipped with high-power LEDs
- Suitable for many commercially available electronic or conventional transformers

References / Links

For Dimming conformity see www.osram.com/DIM For further products and actual information concerning LED lamps see www.osram.com/ledlamps For Guarantee see www.osram.com/guarantee Further information see www.osram.de/low-voltage-ledlamps

¹⁾ All technical parameters apply to the entire lamp | Due to the complex production process for light-emitting diodes, the typical values shown for the technical LED parameters are purely statistical values that do not necessarily match the actual technical parameters of each individual product, which can vary from the typical value

PARATHOM® PRO MR16 20 advanced

Product description



- True replacement for MR16 20W halogen lamp
- Dimension comparable to the GU5.3 halogen lamp
- Dimmable down to 10%
- High quality light with a CRI>90

Product Offering

| Type reference | Power | CCT | Beam Angle | CRI |
|--------------------|-------|-------|------------|-----|
| MR16 20 24 adv 927 | 5W | 2700K | 24° | 90 |
| MR16 20 36 adv 927 | 5W | 2700K | 36° | 90 |
| MR16 20 24 adv 930 | 5W | 3000K | 24° | 90 |
| MR16 20 36 adv 930 | 5W | 3000K | 36° | 90 |
| MR16 20 24 adv 840 | 5W | 4000K | 24° | 80 |
| MR16 20 36 adv 840 | 5W | 4000K | 36° | 80 |

1. Key Features and Benefits

- 5W LED lamp as high-quality replacement of 20W-35W halogen lamp
- GU5.3 base
- 12V AC/DC input voltage
- Dimmable¹
- available in three different colour temperature:
 - 2700K – warm white
 - 3000K – warm white
 - 4000K – cool white
- high colour consistency: <5 Standard Deviation Colour Matching
- reduces energy consumption up to 84%
- shock-proof and vibration-proof
- 30,000 hours lifetime
- UV and NIR radiation free
- Mercury free
- operates with most common conventional and electronic control gear
- 5 years Osram Guarantee²

¹ See www.osram.com/dim

² See www.osram.com/guarantee



product details

PRO MR 16 20 36#176; 930 adv

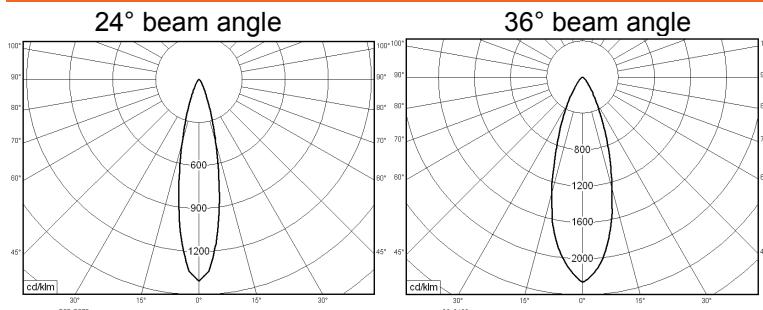
2. Common Characteristics³

| Average lifetime ⁴ | | Switching cycles (30s on, 30s off) | | Casing material | Starting time | Warm up time for 60% light | Power factor |
|-------------------------------|-----------|---------------------------------------|----------|-----------------|-------------------------------------|-------------------------------|--------------|
| 30,000h | | 1,000,000 | | Metal/plastic | 0.0s | none | 0.9 |
| Mercury max. | Base Type | Length | Diameter | Weight | Tc temperature max. ⁵ | Nominal current | Max. current |
| 0.0mg | GU5.3 | 46mm | 50mm | 48g | 90°C | 0.46A | 0.96A |

3. Characteristic Range³

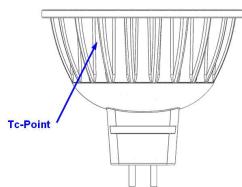
| Type reference | Power | Luminous Flux ⁶ | Luminous intensity ⁶ | Correlated colour temperature | Standard deviation colour matching | Colour rendering index | Beam angle |
|--------------------|-------|-------------------------------|------------------------------------|----------------------------------|---------------------------------------|------------------------------|---------------|
| MR16 20 24 adv 927 | 5W | 190lm | 800cd | 2700K | <5 | 90 | 24° |
| MR16 20 36 adv 927 | 5W | 190lm | 460cd | 2700K | <5 | 90 | 36° |
| MR16 20 24 adv 930 | 5W | 210lm | 950cd | 3000K | <5 | 90 | 24° |
| MR16 20 36 adv 930 | 5W | 210lm | 500cd | 3000K | <5 | 90 | 36° |
| MR16 20 24 adv 840 | 5W | 290lm | 1100cd | 4000K | <5 | 80 | 24° |
| MR16 20 36 adv 840 | 5W | 290lm | 720cd | 4000K | <5 | 80 | 36° |

4. Light distribution curve



5. Mounting information

Good heat exchange supports ideal performance



³ Typical values measured at 12V AC. All the technical parameters apply to the entire lamp. In view of the complex manufacturing process for light emitting diodes, the typical values given above for the technical LED parameters are merely statistical values that do not necessarily correspond to the actual technical parameters of an individual product; individual products may vary from the typical values.

⁴ The average lifetime of LED lamps is defined as the number of hours when the light output of 50% of a large group of identical lamps goes below 70% of its initial luminous flux (L70B50, IEC60969). The lifetime is estimated at room temperature (25°C), free air burning, base up burning position and at rated voltage. To achieve a full lifetime a good heat exchange for the electronic components is required.

⁵ The Tc is defined as the highest permissible temperature which may occur on the outer surface of the LED lamp (in the indicated position) under normal operating conditions and at the rated voltage/current/power or the maximum of the rated voltage/current/power range (DIN EN 62031: 2009-01)

⁶ Measured at 12V DC



6. Disposal information

WEEE-lamps can be returned at specific collection points.

LED lamps have to be disposed as special waste.



7. Application Information

Applications

- hotels
- restaurant
- commercial areas
- residential
- art galleries and museum
- office space

Application Notes

1. suitable for indoor application.
2. for outdoor applications and operation in damp locations special approved fixture are required.
3. Input voltage:
AC: 12V
DC: 10V...24V
4. Operating temperature range between -20°C and 40°C

8. Cost savings: example

| Reference product description | Similar halogen product | Watts saved | Cost saved after 1 year | Cost saved after 2 years | Cost saved after 5 years |
|-------------------------------|-------------------------|-------------|-------------------------|--------------------------|--------------------------|
| MR16 20 36 adv 930 | MR16 halogen 20W | 15W | 5€ | 30€ | 107€ |

Based on the assumption of 12hours/day on and an energy cost of 0.19€/kWh

9. Ordering Guide

| Type reference | Product Number – 1pcs | Product Number – 1 shipping unit | Number of pcs / ship. unit |
|--------------------|-----------------------|----------------------------------|----------------------------|
| MR16 20 24 adv 927 | 4008321973252 | 4008321973269 | 10 |
| MR16 20 36 adv 927 | 4008321972217 | 4008321972224 | 10 |
| MR16 20 24 adv 930 | 4008321973276 | 4008321973283 | 10 |
| MR16 20 36 adv 930 | 4008321972095 | 4008321972101 | 10 |
| MR16 20 24 adv 840 | 4008321973290 | 4008321973306 | 10 |
| MR16 20 36 adv 840 | 4008321972118 | 4008321972125 | 10 |

10. Lamp conformity

2004/108/EC Electromagnetic compatibility (EMC)

2009/125/EC Ecodesign requirements for energy related products

2011/65/EC Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

1907/2006 Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH Regulation)

2002/96/EC Waste Electrical and Electronic Equipment Directive (WEEE)

EN 62471 Photobiological safety of lamps and lamp systems

IEC/TR 62471-2 Photobiological safety of lamps and lamp systems - Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety

EN 55015 Limits and methods of measurement of radio disturbance

EN 61000-3-2 Electromagnetic compatibility – Limits for harmonic current emission

EN 61000-3-3 Electromagnetic compatibility – Limitation of voltage changes, voltage fluctuations, flicker in public low voltage supply systems

EN61547 Electromagnetic compatibility immunity requirements

11. Compatibility performance with transformers without dimmer ⁷

Status: November 2011

Legend

| ET / electronic transformers | MT / magnetic transformers | OT / optotronic transformers | | | | |
|------------------------------|----------------------------|------------------------------|--------------------------------------|----------------------|-----|-----|
| G / good | | NG / poor function | | N/A / not applicable | | |
| Transformer information | | | Number of tested lamps (@230V input) | | | |
| Brand | Model | Type | 1 | 2 | 3 | 4 |
| NA | 100VA | MT | G | G | G | G |
| OSRAM | ET-MZ 60/110-130 | ET | NG | G | G | N/A |
| OSRAM | ET-A 60/220-240 | ET | G | G | G | N/A |
| OSRAM | ET-C 70/220-240 | ET | G | G | G | N/A |
| OSRAM | ET-Z 60/220-240 | ET | G | G | G | N/A |
| OSRAM | ET-ZL 50/220-240 | ET | G | G | N/A | N/A |
| OSRAM | ET-ZE 60/220-240 | ET | G | G | G | N/A |
| OSRAM | ET-P 60/220-240 (Gen2) | ET | G | G | G | N/A |
| OSRAM | ET-Parrot 70/220-240 I | ET | G | G | G | N/A |
| OSRAM | ET-Parrot 105/220-240 I | ET | NG | G | G | G |
| OSRAM | TET-E60I/220-240 | ET | NG | NG | G | N/A |
| OSRAM | ET-Redback 60/230-240 | ET | G | G | G | N/A |
| OSRAM | HTB 70/220-240 | ET | G | G | G | N/A |
| OSRAM | HTB 105/220-240 | ET | G | G | G | G |
| OSRAM | HTB 70/230-240 | ET | G | G | G | N/A |
| OSRAM | HTN 75/230-240 I | ET | NG | G | G | N/A |
| OSRAM | HTM 70/230-240 | ET | G | G | G | N/A |
| OSRAM | HTM 105/230-240 | ET | G | G | G | G |
| OSRAM | HTM 150/230-240 | ET | NG | NG | G | G |
| OSRAM | HTL105/230-240 | ET | NG | NG | G | G |
| OSRAM | OT 12/220-240/10 | OT | G | G | N/A | N/A |
| OSRAM | OT 15/220-240/10 | OT | G | G | N/A | N/A |
| OSRAM | OT 50/220-240/10 | OT | G | G | G | G |
| OSRAM | OTe 35/220-240/12 | OT | G | G | G | G |
| OSRAM | OT 20/220-240/24 | OT | G | G | N/A | N/A |
| OSRAM | OT 75/220-240/24 | OT | G | G | G | G |
| OSRAM | OTe 18/220-240/24 | OT | G | G | N/A | N/A |
| OSRAM | Hti DALI 105/230-240 DIM | HTi | NG | NG | NG | NG |
| OSRAM | Hti DALI 150/220-240 DIM | HTi | NG | NG | NG | NG |
| OSRAM | Hti DALI 315/230-240 DIM | HTi | G | G | G | N/A |
| OSRAM | Hti DALI 315/230-240 DIM | HTi | G | G | G | G |
| OSRAM | Hti DALI 315/230-240 DIM | HTi | NG | G | G | N/A |
| OSRAM | Hti DALI 315/230-240 DIM | HTi | G | G | G | N/A |
| OSRAM | Hti DALI 315/230-240 DIM | HTi | G | G | G | N/A |

⁷

Typical values. Test performed exemplary on PARATHOM PRO MR16 20 24 adv 927

The test results reflect the measurement of the individual devices that were used in tests. OSRAM does not take over any responsibility, warranty or liability that this results can also be achieved by using the devices under other conditions or when using successor models of the tested devices or different models of the same manufacturer.

The test results were achieved by using the above mentioned LED-lamp types. OSRAM does not take over any responsibility, warranty or liability that this results can also be achieved by using the devices under other conditions or when using other LED-lamp types.



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| Transformer information | | | Number of tested lamps (@230V input) | | | | Note |
|-------------------------|----------------------|------|--------------------------------------|-----|-----|-----|------|
| Brand | Model | Type | 1 | 2 | 3 | 4 | |
| SLV | 461060 | ET | G | G | G | N/A | |
| SLV | 461310 | ET | NG | NG | G | G | |
| BLOCK | HES 70K | ET | G | G | G | N/A | |
| BLOCK | HES 105K | ET | NG | G | G | G | |
| EVN | TAB 50(0410) | ET | G | G | N/A | N/A | |
| EVN | CLOU 60(T41/09) | ET | G | G | G | N/A | |
| Berker | SNT 70/QU 2918 | ET | NG | NG | G | N/A | |
| Berker | SNTF 105 297401 | ET | NG | NG | G | G | |
| Berker | SNTF II 35-105W 2927 | ET | NG | NG | G | G | |
| Berker | SNT 40 2915 | ET | G | G | N/A | N/A | |
| TCI | PUMA 60 | ET | NG | G | G | N/A | |
| TCI | EF 70 | ET | G | G | G | N/A | |
| TCI | PUMA 105 | ET | NG | G | G | G | |
| Paulmann | Euro S 70 | ET | NG | NG | G | N/A | |
| Paulmann | Profi 50 | ET | NG | G | N/A | N/A | |
| JUNG | SNT 70 Q | ET | NG | G | G | N/A | |
| JUNG | SNT 40 | ET | G | G | N/A | N/A | |
| JUNG | SNT 70 F | ET | NG | G | G | N/A | |
| JUNG | SNT 105 F | ET | NG | G | G | G | |
| nobile | EN-80F | ET | NG | G | G | G | |
| nobile | EN-60D2 | ET | NG | G | G | N/A | |
| nobile | EN-60D | ET | NG | G | G | N/A | |
| nobile | EN-35R | ET | G | N/A | N/A | N/A | |
| Goodbay | SET110LV(35-110W) | ET | NG | NG | G | G | |
| PHILIPS | Primaline 70 230-240 | ET | NG | NG | G | N/A | |

12. Dimming behaviours ⁷

Status November 2011

| Legend | |
|------------------|-------------------|
| L / leading edge | T / trailing edge |
| Y / yes | N / no |

| Dimming behaviour with HTM 70 @ Vin= 230V, 50Hz | | | | | | |
|---|----------------|------|---------------------------|-------------------|-----|----------------------|
| Dimmer info | | | Number of lamp under test | Dimming range (%) | | Note |
| Brand | Model | Type | | Min | Max | |
| Berker | Nr. 2874 | T | 1 | 14 | 100 | |
| CONRAD | T46 | T | 1 | 23 | 100 | Flickering below 23% |
| EVERFLO | | T | | | | |
| URISH | EFM700DC | T | 1 | 32 | 100 | |
| ELSO | ATD315(174200) | T | 1 | 40 | 100 | Flickering at ~70% |
| Busch | 6513U-102 | T | 1 | 48 | 100 | |
| Legrand | 775903 | T | 1 | 11 | 100 | |
| Merten | 577199 | T | 1 | 29 | 100 | |
| EVERFLO | | T | | | | |
| URISH | EFO700DC | T | 1 | 42 | 100 | Flickering below 42% |
| HPM | Cat 400T | T | 1 | 8 | 100 | Flickering below 8% |

| Dimming behaviour with HTM 105 @ Vin= 230V, 50Hz | | | | | | |
|--|----------------|------|---------------------------|-------------------|-----|----------------------|
| Dimmer info | | | Number of lamp under test | Dimming range (%) | | Note |
| Brand | Model | Type | | Min | Max | |
| Berker | Nr. 2874 | T | 1 | 10 | 100 | |
| CONRAD | T46 | T | 1 | 12 | 100 | |
| EVERFLO | | T | | | | |
| URISH | EFM700DC | T | 1 | 30 | 100 | |
| ELSO | ATD315(174200) | T | 1 | 44 | 100 | |
| Busch | 6513U-102 | T | 1 | 51 | 100 | |
| Legrand | 775903 | T | 1 | 30 | 100 | Flickering below 30% |
| Merten | 577199 | T | 1 | 33 | 100 | |
| EVERFLO | | T | | | | |
| URISH | EFO700DC | T | 1 | 35 | 100 | |
| HPM | Cat 400T | T | 1 | 5 | 100 | Flickering below 5% |



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PRO MR 16 20 36; 930 adv

| Dimming behaviour with ET-Parrot70 @ Vin= 230V, 50Hz | | | | | | |
|--|----------------|------|---------------------------|-------------------|-----|------|
| Dimmer info | | | Number of lamp under test | Dimming range (%) | | Note |
| Brand | Model | Type | | Min | Max | |
| Berker | Nr. 2874 | T | 1 | 6 | 100 | |
| CONRAD | T46 | T | 1 | 8 | 100 | |
| EVERFLO | EFM700DC | T | 1 | 25 | 100 | |
| URISH | | | | | | |
| ELSO | ATD315(174200) | T | 1 | 38 | 100 | |
| Busch | 6513U-102 | T | 1 | 46 | 100 | |
| Legrand | 775903 | T | 1 | 10 | 100 | |
| Merten | 577199 | T | 1 | 29 | 100 | |
| EVERFLO | EFO700DC | T | 1 | 30 | 100 | |
| URISH | | | | | | |
| HPM | Cat 400T | T | 1 | 0 | 100 | |

The lamp shows poor functionality with leading edge dimmers.
Leading edge dimmers not recommended.