

# PHOTO OPTIC INSIDE



## TAILOR-MADE TO MEET THE HIGHEST DEMANDS

VIP HALOGEN DISCHARGE LAMPS FOR THE SPECIAL NEEDS OF MULTIMEDIA DATA AND VIDEO PROJECTION

## COOL AND UNOBTRUSIVE

TVLINE FLUORESCENT LAMPS - THE PERFECT ADDITION TO YOUR FILM LIGHTS

## STILL THE BEST

HMI® METAL HALIDE LAMPS - FOR MORE THAN 20 YEARS THE UNDISPUTED NUMBER ONE FOR FILM AND TV RECORDINGS IN DAYLIGHT CONDITIONS

## A SHOT OF XENON

HLX® LAMPS WITH XENOPHOT® TECHNOLOGY - BRIGHTER, WHITER AND FRESHER LIGHT FOR THE BEST RESULTS IN OVERHEAD PROJECTION

THERE IS LIGHT. AND THERE IS OSRAM.

**OSRAM**

# THE OF THE SHOW - LIGHT FROM OSRAM

# S

## S SETTING THE PACE

*The two Oscars awarded to OSRAM by the © Academy of Motion Picture Arts and Sciences® for the development and continuous improvement of the HMI® and XBO® lamps from OSRAM, which have been so important and successful in the motion picture industry, are evidence in themselves of our world-wide recognition.*



Ever since the early days of electric lighting OSRAM has been responsible for milestones in the photo-optical sector with its development of innovative lighting solutions and manufacturing technologies. Its special lamps owe their superiority to dedicated and pioneering development work and have frequently shown the way forward, not only within the industry but also in their particular areas of application.

### PHOTO OPTICS DIVISION

The Photo Optics Division was created in October 1988 to bring together our various development, production, sales and marketing expertise. The name was chosen at the time to reflect our involvement in lighting for classic photography but it hardly does the Division justice today. From specialising in flash bulbs and other "photographic" lamps, OSRAM's Photo Optics Division has now become a problem solver for a great many special areas of lighting. Since October 1997, the Division has been organised along international lines. Development and production now take place at three sites, namely the USA, Japan and Europe, and all our products are marketed world-wide under the OSRAM name.

# TAR



*OSRAM is one of the two largest lighting manufacturers in the world. In contrast to other companies in the "premier league" we also lead the field in the specialist photo optic sector with a wide and comprehensive range of products that we have developed and expanded over many years. Thanks to constant innovation, customer support and an international outlook, and thanks in particular to our customers, the Photo Optics Division at OSRAM has experienced phenomenal growth. With sales of around DM 300 million, we now have nearly a 30% share of the world market.*

## PROFESSIONALS IN TOUCH WITH THEIR CUSTOMERS

By concentrating all the entrepreneurial activities of the special Photo Optics sector into a separate international Division we have created the basis for greater speed of service and better customer



*Bernd Schaefer, Head of the international Photo Optics Division at OSRAM.*

support. These are absolutely essential if we are to continue to operate successfully in this technology-led market. The applications and requirements of our customers are of paramount importance. Project teams comprising marketing and development experts from Europe, the USA and Asia are created to develop and implement product concepts for special equipment together with our international OEM customers – famous-name manufacturers from the fields of industrial optics, medical engineering, the photographic industry and chip fabrication, to name but a few.

## INNOVATION AS A DUTY

In our efforts to provide products of the highest quality and maintain a technical lead, we place great importance in the Photo Optics Division on research and development. As a result, around 50% of sales is achieved with discharge lamps that have been developed within the last five years.

Innovative technology and production processes coupled with broad expertise and experience have given OSRAM an enviable reputation in professional photo optic circles.

We should like to thank all our customers for the trust they have placed in our technical expertise and for their cooperation and creative input. Without them we would not be nearly as successful. We have no intention of resting on our laurels; we see our past successes as a challenge and obligation for the future – so that we continue to offer you the best possible products and the best possible service.

## CONTENTS

<b>A REAL COOL CUSTOMER:</b> The new TVLINE fluorescent lamps	<b>4</b>
<b>A MULTI-TALENTED FAMILY:</b> Metal halide lamps from OSRAM	<b>6</b>
<b>A PERFECT MATCH:</b> VIP halogen discharge lamps	<b>8</b>
<b>LESS IS MORE:</b> New halogen lamps for SSTV	<b>9</b>
<b>IMPRESSIVE ENTRY:</b> HLX lamps for projection	<b>10</b>

# A REAL COOL CUSTOMER



Lower electrical consumption, less heat, more light. These are the attributes that are usually mentioned whenever we talk about fluorescent lamps. Hardly surprising, then, that over the past few years more and more fluorescent lamps have been used as studio, TV, film and stage lighting. Fluorescent lamps with their high luminous efficacy and low connected load values are ideal wherever soft area lighting is needed. Cool light in small studios, background lighting that does not bring actors out in a sweat and luminaires that can be connected to the normal mains supply are just what lighting professionals have been looking for.



#### **OSRAM MIXES AND MATCHES**

Traditionally there have been difficulties in mixing the light from fluorescent lamps with that from halogen lamps or daylight lamps. OSRAM is taking a typically pioneering approach to the problem and will shortly be launching fluorescent lamps that are perfectly matched to the various media and light sources used in filming and TV work.

Whether you normally work with halogen or daylight lamps, the new OSRAM TVLINE fluorescent lamps can be used with them without any problem at all. TVLINE lamps are fully dimmable and retain their excellent colour stability even when dimmed.



# A MULTI TALENTED FAMILY

## C OMPACT AND RUGGED: HSR® AND HSD®

In view of their high luminance, HSR® and HSD® lamps are perfect for lighting equipment that are fitted with high-quality optical systems. Their applications range from discos to TV shows, from films to stage shows. Wherever they are used they put the stars and the scenery in the right light and create the right special effects. Their rugged design means they are easy to handle and will operate reliably, even in notoriously demanding applications such as effect lighting. This is thanks mainly to their single-ended design, compact dimensions, outer bulb and an internal construction which, thermally and mechanically, is extremely robust.

HSR® and HSD® lamps complement one another perfectly. Together, they cover a wattage range from 200 W to 1200 W. The principal strengths of the HSD® lamp are its extremely long life and high luminous efficacy. In addition to the successful HSD® 200 and HSD® 250 lamps, OSRAM can now offer a 400 W version – and development of the HSD® 575 is already under way. Higher wattages equate directly to high luminous flux. In our two new developments we have made sure that despite achieving “more” light we have maintained the same high quality of light that customers have come to expect from the HSD® 200 and HSD® 250.

Lamps from the OSRAM family of metal halide lamps are all shining stars with their high luminous efficacy (two to three times as bright as halogen lamps) and their brilliant light that's very close to natural daylight. They are used above all in spotlights and projectors for effect/disco lighting, stage lighting and studio/film/TV lighting.

### ✓ HMI®

Discharge lamps for ac operation; the arc burns in a high-pressure atmosphere of mercury vapour and halides of the rare earths. Can be hot restarted and dimmed.

### ✓ HTI®

Metal halide lamps similar to HMI® lamps but with short-arc technology.

### ✓ HSR®

Similar to HTI® lamps. With outer bulb for ease of handling. High luminance.

### ✓ HSD®

Long-life HSR® lamps.

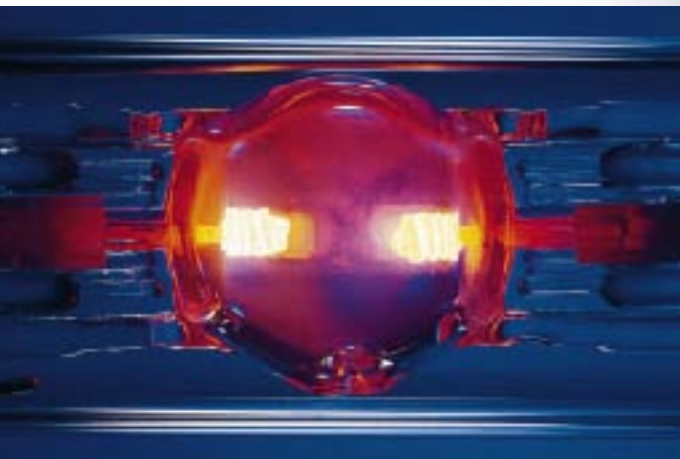
*HSR® lamps are available in wattages from 400 W to 1200 W. They are renowned for the high quality of their light which remains constant throughout their entire life. Because of their high luminance and rugged design these lamps are ideal for use in effect lighting projectors and other such equipment.*

METAL HALIDE LAMPS



*HSR® lamps: high luminance and constant quality of light, 400 W to 1200 W*





# HMI®: DAYLIGHT 24 HOURS A DAY

The light from HMI® lamps is as close to daylight as you can get. These lamps offer a luminous efficacy of up to 100 lm/W, a colour temperature of around 6000 K and a colour rendering index (Ra) > 90. They are therefore used mainly for film and television work – the lower wattage models tend to be used for news reporting and the like, while the higher wattage lamps are used in studio productions. On stage, HMI® light is being increasingly used for dramatic effect, and more and more photographers are discovering the benefits of HMI® light.

## STILL THE BEST

Even now, 25 years after its invention, our HMI® light has lost nothing of its shine. Quite the opposite: HMI® lamps were originally developed to provide the first colour television cameras with enough light for transmission, but the daylight character of the light and its excellent colour rendering properties have combined to ensure that HMI® lamps are used in more applications than ever before. HMI® lets the sun shine not only in the television studio and on the stage but also on film locations and at open-air concerts and has become firmly established as a high-quality light source for large-scale and overhead projection, underwater lighting for divers, effect lighting for discos and many other applications. In 1988 an OSCAR was even awarded to OSRAM by the © Academy of Motion Picture Arts and Sciences® for the development and continuous improvement of HMI® lamps. This award was, and still is, an enormous incentive for us to continue our development work on these lamps, which range from 125 W to 18,000 W.

The latest newcomer to the range is the HMI® 1200 W/S which is squarely in line with the trend towards more compact light sources. Lamps from OSRAM are famous for their reliability and performance, backed by our many years of experience. Our close contact with leading manufacturers ensures that our latest developments at the leading edge of lamp technology will soon be used in new and even better products that have been tailored to their specific requirements.

*HMI® lamps: "daylight" and excellent colour rendering 24 hours a day*



APPLICATIONS	HMI®	HTI®	HSR®	HSD®
Studio/film/TV	●		○	
Stage	●		○	
Disco	○	●	●	●

● Main application ○ Secondary application

# A PERFECT MATCH



## TAILOR-MADE TO MEET THE HIGHEST DEMANDS

VIP lamps are halogen discharge lamps that meet the particular requirements of multimedia data and video projection. They have a number of special features, including:

- ✓ extreme short arc
- ✓ very high luminance
- ✓ long life
- ✓ high luminous efficacy
- ✓ tailor-made colour spectrum
- ✓ optimised reflector configuration
- ✓ ECG operation

VIP lamps from OSRAM are used in light valve projectors (video projectors) based on LCD (Liquid Crystal Display) or DMD (Digital Micromirror Devices) technology. Their spectral distribution has been adapted to the colour filter curves of the projectors and their service life optimised for maximum luminance and luminous efficacy. These benefits make them

ideal light sources for professional projection applications.

## STANDARD VIP AND VIP-P

VIP lamps are available as reflector lamps ("R" models) with elliptical or parabolic reflectors, or as single-ended ("S") models. VIP lamps of the P generation achieve very high luminance values and very small spreads thanks to their specific filling parameters and very short electrode gaps. Standard VIP lamps, on the other hand, are based on more conventional filling systems. With their longer arcs they offer a high degree of freedom for spectral matching.

With OSRAM lamps, video projections are always an exciting experience. Large-screen projections, multimedia presentations and film shows take on a new light thanks to the high luminance, excellent luminous efficacy and long life of the lamps from OSRAM's VIP family. What's more, they all provide a spectral distribution that is perfectly matched for video projectors. Yet another highlight in OSRAM's long line of innovations in the photo optics sector. OSRAM VIP is the perfect choice for anyone looking for the best possible light source for their video projectors.





# LESS IS MORE

*HPL high-performance lamps from OSRAM*

*Specially developed for ETC "Source Four" spotlights, already the preferred light source for a large number of lighting designers. The unique filament design and the special ellipsoidal reflector on the "Source Four" spotlight combine to make the best possible use of the light. The special base on the HPL is particularly good at conducting heat away so that the lamp can operate under optimum conditions.*

For some time there has been a clear trend in professional lighting for customers in the stage, studio and TV sectors to demand more and more light from fewer and fewer spotlights. This means that more light has to be produced from the same lamp wattage, and it also means that the volume and weight of the spotlights have to be reduced. Spotlight manufacturers have responded to the challenge by equipping their products with high-quality optical systems. Whereas the standard combination in the past was a spherical reflector, vertical lamp and a fresnel lens, we are now seeing more and more ellipsoidal reflectors, axial lamps and projection optics.

## **OSRAM IS PLAYING A LEADING ROLE**

There is harsh competition to provide more and more light, but we would be completely out of the running if we did not constantly seek to develop and improve our halogen lamps. OSRAM has always set the pace with lamps such as the high-performance HPL 575 W (specially developed for a particular spotlight manufacturer) and our latest models, the 64716 (ANSI code GKV), 64711 (HP600) and 64712 (ANSI code FLK), which are suitable for a wide range of spotlights from different manufacturers. These spotlights have a number of features in common – lamp wattages from 575 to 600 W, ellipsoidal reflectors and at least the same luminous flux as conventional 1000 W spotlight systems thanks to lamps with extremely compact filaments and high luminous efficacy from the optimised blend of filler gases. The latest generation of spotlights produce the same illuminance from 800 W lamps as traditional systems with 2000 W lamps. Here and for all future developments, OSRAM is just the reliable partner you need on your side – to assist in system developments and to supply high-quality lamps.

NEW HALOGEN LAMPS FOR SSTV



# IMPRESSIVE ENTRY



HLX® lamps from OSRAM in XENOPHOT® technology are halogen lamps filled with xenon instead of krypton. They achieve up to 10% higher luminous flux than conventional versions. Their compact filament geometry produces a brighter, whiter and fresher light that is so important for projection purposes. HLX® lamps are therefore a real alternative to discharge lamps. The optimised filament design means the lamps can be operated to achieve either maximum luminous efficacy or long life. This is why OSRAM's HLX® family of lamps includes models that offer extremely high luminous efficacy for projection and models that will last up to 300 hours for medical, laboratory and industrial applications.

*The new HLX® 64669 offers a luminous flux of more than 20,000 lm with extremely high luminous efficacy. This, together with its colour temperature of 3400 K, makes it the perfect light source for overhead projection.*



*Expo 1992, Sevilla,  
Photo AVF, Berlin*

# WOULD YOU LIKE TO KNOW MORE ABOUT LIGHT FOR PHOTO, FILM, TV, STAGE AND OPTICS FROM OSRAM?

NO PROBLEM. WE CAN SEND YOU DETAILED INFORMATION FREE OF CHARGE.

NAME	FUNCTION
COMPANY/STAMP/ADDRESS	
TELEPHONE	FAX

PLEASE FILL IN AND FAX TO:

**(+49) 89/6213-2016**

To reflect the particular interests of our various customer groups, we have put together a number of information packs with details of the products presented in this brochure.

Please indicate the customer group to which you belong and the products that interest you so that we can send you the right information packs.

#### CUSTOMER GROUP:

- Spotlight manufacturer/OEM
- Projector manufacturer/OEM
- Overhead projection
- Video projection
- Slide projection
- Photographic studio
- Stage/theatre
- TV-/Filmstudio
- Disco/effect lighting
- Photo optic retailer
- Photo optic wholesaler
- Other:

#### I'D LIKE INFORMATION ON:

- VIP halogen discharge lamps
- Halogen lamps
- OSRAM metal halide lamps (HMI®, HTI®, HSR®, HSD®, HMP®)
- Others:

#### IF YOU ALSO NEED ONE OF OUR COMPREHENSIVE CATALOGUES OR CORPORATE INFORMATION ON OSRAM, PLEASE INDICATE YOUR REQUIREMENTS BELOW:

- Lighting Programme, Photo Optics – the specialist catalogue for light for photo, film, TV, stage and optics
- OSRAM Indoor and Outdoor Lighting – all our products in one catalogue
- OSRAM Indoor and Outdoor Lighting – on CD-ROM
- Illuminating ideas – the OSRAM range of luminaires



**HEADOFFICE**

OSRAM GmbH  
Hellabrunner Straße 1  
81543 Munich  
Tel.: (0 89) 62 13-0  
Fax: (0 89) 62 13-20 20  
http://www.osram.de

OSRAM GmbH  
Geschäftsbereich Foto/Optik  
Nonnendammallee 44-61  
13625 Berlin  
Tel.: 0 30/33 86-0  
Fax: 0 30/33 86-2773

OSRAM SYLVANIA INC.  
Photo Optics Division  
100 Endicott Street  
Danvers, MA 01923  
Tel.: 508-777-1900  
Fax: 508-777-1247

**INTERNATIONAL ADDRESSES**

**Argentina**  
OSRAM Argentina S.A.C.I.  
Ramos Mejía 2456  
1609 Boulogne Sur Mer  
Pcia. Buenos Aires  
Tel.: 1-7 19 80 00  
Fax: 1-7 37 02 22

**Australia**  
OSRAM Australia Pty. Ltd.  
P.O. Box 673  
423 Pennant Hills  
N.S.W. 2120  
Tel.: 2-9-4 81 83 99  
Fax: 2-9-4 81 94 68

**Belgium**  
N.V. OSRAM S.A.  
Mercuriusstraat 28  
1930 Zaventem Zuid 7  
Tel.: 2-7 19 29 11  
Fax: 2-7 21 40 85

**Brazil**  
OSRAM do Brasil  
Cia da Lâmpadas  
Elétricas Ltda.  
Av. dos Automotistas 4229  
06001-970 Osasco-SP  
Tel.: 11-7 04 74 22  
Fax: 11-7 05 94 95

**China**  
OSRAM Foshan Lighting  
Co. Ltd.  
East-West Highway, Xiebian  
Dali Town, Nanhai 52831  
Guangdong  
Tel.: 757-5 51 16 66  
Fax: 757-5 51 15 55

OSRAM Foshan Lighting  
Co. Ltd.  
Shanghai Branch  
Block B, Rm. 408,  
Yin Hai Building  
No. 250, Cao Xi Road  
Shanghai, 200233  
P.R. China  
Tel.: 21-64 82-97 07  
Fax: 21-64 82-12 19

**Denmark**  
OSRAM A/S  
Dybendalsvænget 3  
Postboks 259  
2630 Tåstrup  
Tel.: 44-77 50 00  
Fax: 44-77 50 55

**Ecuador**  
OSRAM del Ecuador S.A.  
Casilla 8410  
Guayaquil  
Tel.: 4-89 36 09  
Fax: 4-89 35 58

**Finland**  
OY OSRAM AB  
Valuraudankuja 3  
00700 Helsinki  
Tel.: 9-3 74 21 00  
Fax: 9-3 74 22 48

**France**  
OSRAM S.A.  
BP 109  
67124 Molsheim Cedex  
Tel.: 3-88-49 74 82  
Fax: 3-88-49 75 49

**Greece**  
OSRAM Griechische  
Glühlampenfabrik A.E.  
Thessalonikis 190  
11853 Athens  
Tel.: 1-3 45 83 11  
Fax: 1-3 47 01 54

**Great Britain**  
OSRAM Ltd.  
P.O. Box 17, East Lane  
Wembley, Middlesex,  
HA9 7PG  
Tel.: 181-9 04 43 21  
Fax: 181-9 01 12 22

**Hong Kong**  
OSRAM Prosperity Co. Ltd.  
Rm 1409 Harbour Centre  
25 Harbour Road, Wanchai  
Hong Kong  
Tel.: (8 52) 25 11 22 68  
Fax: (8 52) 25 11 20 38

**India**  
OSRAM India (pvt.) Ltd.  
1/95 Market Road  
(Off Bhai Veer Singh Marg)  
New Delhi-110001  
Tel.: 11-3 34 85 69  
Fax: 11-3 34 85 63

**Indonesia**  
PT OSRAM Indonesia  
Jalan Lodan No. 2  
Blok B 2-3  
Jakarta 14430  
Tel.: 21-6 90 71 72  
Fax: 21-6 90 91 52

**Italy**  
OSRAM Società Riunite  
OSRAM Edison-Clerici S.p.A.  
Via Savona 105  
20144 Milano  
Tel.: 2-42 49-1  
Fax: 2-42 49-3 80

**Japan**  
Mitsubishi Electric  
OSRAM Ltd.  
Tobu Yokohama  
Bldg. No. 3, (4F)  
8-29 Kitasaiwai 2-chome  
Nishi-Ku,  
Yokohama 220  
Tel.: 45-3 23-51 20  
Fax: 45-3 23-51 55

**Canada**  
OSRAM SYLVANIA Ltd.  
2001 Drew Road  
Mississauga  
Ontario L5S 1S4  
Tel.: 9 05-6 73-61 71  
Fax: 9 05-6 73-62 90

**Korea**  
OSRAM Korea Co., Ltd.  
Ye-Sung Bldg.  
3rd. Floor 150-30  
Samsung-Dong  
Kangnam-ku, Seoul  
ROK-135-090 Korea  
Tel.: 2-5 54 41 12  
Fax: 2-5 56 16 44

**Malaysia**  
OSRAM Singapore Pte. Ltd.  
Kuala Lumpur Branch  
15-02 Amoda Bldg.  
22 Jalan Imbi  
55100 Kuala Lumpur  
Tel.: 3-2 45 95 33  
Fax: 3-2 45 95 35

**Mexico**  
OSRAM de Mexico,  
S.A. de C.V.  
Camino a Tepalcapa No. 8  
54900 Tultitlan  
Tel.: 5-8 99 18 00  
Fax: 5-8 99 19 00

**Netherlands**  
OSRAM Nederland B.V.  
Vennootsweg 15  
2404 CG Alphen a/d Rijn  
Tel.: 1 72-48 38 38  
Fax: 1 72-44 30 25

**Norway**  
OSRAM Fabrikken A.S.  
Drammensveien 35  
0205 Oslo 2  
Tel.: 22-55 22 50  
Fax: 22-55 26 92

**Austria**  
OSRAM Österreichische  
Glühlampenfabrik Ges.m.b.H.  
Ober-Laaser-Straße 253  
1230 Vienna  
Tel.: 1-6 80 68  
Fax: 1-6 80 68-7

**Poland**  
OSRAM sp. z o.o.  
ul. Wiertnicza 117  
PL 02-952 Warszawa  
Tel.: 00 48 22-6 51 78 69  
Fax: 00 48 22-6 42 14 18

**Portugal**  
OSRAM Empresa  
de Aparelhagem  
Eléctrica Lda.  
Rua das Quintinhas, Lote 12  
2795 Carnaxide  
Tel.: 1-4 16 58 60  
Fax: 1-4 17 12 59

**Rumania**  
OSRAM Romania S.R.L.  
Str. Pivnicerului No. 2  
Sector 1  
Bukarest, Romania  
Tel.: 1-2 22 95 93  
Fax: 1-2 22 46 89

**Russia**  
OSRAM Moskau  
UL. Malaja  
Kaluschskaja, 19/1  
117071 Moscow  
Tel.: 0 95-9 58 12 72  
Fax: 0 95-9 31 96 74

**Saudi-Arabia**  
OSRAM Riyadh  
c/o ACEM  
P.O. Box 556  
Riyadh 11421  
Tel.: 1-4 79 01 00  
Fax: 1-4 78 56 13

**Sweden**  
OSRAM AB  
Rudanvägen 1  
13625 Haninge  
Tel.: 8-7 07 44 00  
Fax: 8-7 07 44 40

**Switzerland**  
OSRAM AG  
In der Au 6  
8401 Winterthur/Töss  
Tel.: 0 52-2 09 91 91  
Fax: 0 52-2 09 99 99

**Singapore**  
OSRAM Singapore Pte. Ltd.  
159 Sin Ming Road  
# 05-04 Amtech Building  
Singapore 575625  
Tel.: 65-5 52 01 10  
Fax: 65-5 52 71 17

**Slovakia**  
OSRAM s.r.o.  
Komárňanská cesta 7  
94093 Nové Zámky  
Tel.: 4 21-8 17 46 41 11  
Fax: 4 21-8 17 46 48 80

**Spain**  
OSRAM S.A.  
Calle de la Solana, 47  
28850 Torrejón de Ardoz  
(Madrid)  
Tel.: 1-6 77-98 89  
Fax: 1-6 77-91 61

**South Africa**  
OSRAM (Pty.) Ltd. Midrand  
No. 260, 15th Road  
Private Bag X206  
Randjespark  
Midrand, 1683  
Tel.: 11-8 05 17 77  
Fax: 11-8 05 17 11

**Taiwan**  
OSRAM Taiwan Co., Ltd.  
13th Floor  
No. 111 Sung Chiang Road  
P.O.B. 46-304  
Taipeh  
Tel.: 2-5 08 35 02  
Fax: 2-5 09 67 82

**Thailand**  
OSRAM (Thailand) Co. Ltd.  
Buntanaphan Building  
5th Floor  
179 Sipraya Road  
Bangrak  
Bangkok 10500  
Tel.: 2-2 37 47 45  
Fax: 2-2 37 47 44

**Czech Republic**  
OSRAM spol. s.r.o., Praha  
Tylovo náměstí 3/15  
12000 Praha 2  
Tel.: 2-21 98 71 00  
Fax: 2-21 98 71 20

**Turkey**  
OSRAM Ampul Tic. A.S.  
Sakir Kesebir Caddesi  
Balmumcu Plaza 2  
No. 32 Daire 11  
80700 Besiktas-Istanbul  
Tel.: 2 12-2 67 07 08  
Fax: 2 12-2 66 52 32

**Ukraine**  
OSRAM Kiev  
Rep. Office OSRAM GmbH  
Moskovskaya Str. 37/2  
252015 Kiev  
Tel.: 44-2 40 49 49  
Fax: 44-2 90 11 38

**Hungary**  
OSRAM Budapest  
Kis-Buda-Center  
Frankel Leó út 30-34  
1023 Budapest  
Tel.: 1-3 26 48 68  
1-3 26 48 77  
Fax: 1-3 26 41 45

**USA**  
OSRAM SYLVANIA INC.  
Photo Optics Division  
100 Endicott Street  
Danvers, MA 01923  
Tel.: 508-777-1900  
Fax: 508-777-1247

**United Arab Emirates**  
OSRAM Gulf Region Office  
P.O. Box 30921  
Dubai  
Tel.: 9 71-4-31 41 54  
Fax: 9 71-4-31 94 91

**Vietnam**  
OSRAM Singapore Pte. Ltd.  
(Representative Office)  
PDD Office Building,  
8th Floor  
162 Pasteur Street  
Ho Chi Minh City  
Tel.: 8-22 85 41  
Fax: 8-22 85 42

