Product Portfolio

Electronic Components for UV Systems

for Treatment and Disinfection Systems on Water. Air and Surfaces





ZED Ziegler Electronic Devices GmbH

Electronic Ballasts/Lamp Drivers www.z-e-d.com

Impressum / Legal Notice

ZED Ziegler Electronic Devices GmbH Langewiesen, In den Folgen 7 D-98693 Ilmenau Germany

phone: +49 (03677) 46803-0 fax: +49 (03677) 46803-19 E-mail: info@z-e-d.com www.z-e-d.com

Amtsgericht Jena, HRA 305882

Geschäftsführerin/ General Manager: Dipl.- Ing. Karin Ziegler

 $Es \ gelten \ unsere \ all gemeinen \ Liefer- \ und \ Zahlungsbedingungen. \ / \ Our \ terms \ of \ delivery \ are \ valid.$

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www.z-e-d.com Table of contents

Made in Germany - High Reliability

Electronic Components for UV Systems

Electronic Ballasts up to 180W Low Pressure5 Electronic Ballasts up to 1200W Low Pressure Electronic Ballasts up to 2500W Medium Pressure9







ZCON Control Units13



Special Software.....10|13|16



UV-C Monitors15



UV-C & Temperature Sensors17



Radiometer & Display Devices19



Lamps, Sleeves & Sockets20



PPT Optimized Amalgam Lamps22



Excimer Lamp Systems23

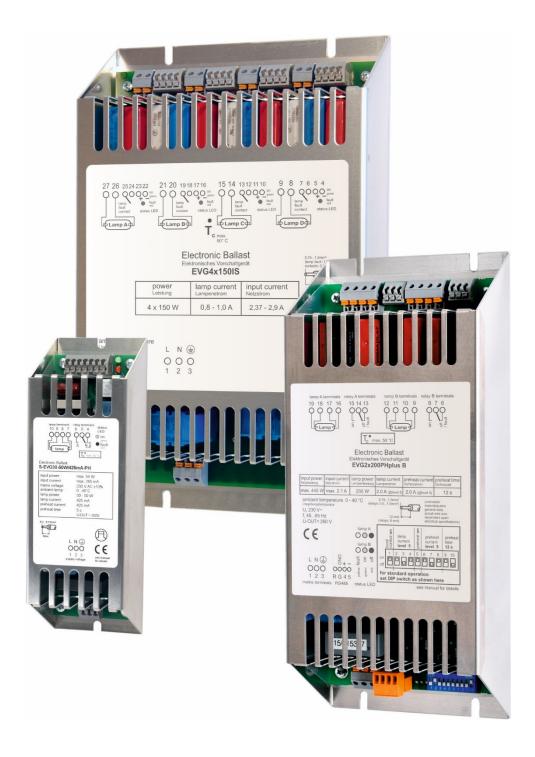






Electronic Ballasts/Lamp Drivers www.z-e-d.com

Electronic Ballasts Low Pressure up to 180W



Electronic Ballasts/Lamp Drivers www.z-e-d.com

Made in Germany - High Reliability

Electronic Ballasts Low Pressure up to 180W

- instant start (IS-, RS-types) or lamp filament preheating (PH-types) for optimal lamp life

- lamp dimming / digital control (PHplus types)
- up to 30m cable length for PH-S/PHplus types
- omplete systems available (UV-Compact)

	no. of lamps	max. lamp power [W]	4pin lamps	2pin lamps	electrode preheating	status indicator LED/relay	dimming	control	dimensions	form type (examples)	
E20RS	1	24	X	-	-	••	-	-	150x40x36 mm		
E20IS	1	24	-	Х	-	••	-	-	(5.90x1.57x1.42 inch)	Superi	
E20RS-24V DC	1	17	X	-	-	●● ¹	-	-		Call Call	
E20IS-24V DC	1	17	-	Х	-	●● ¹	-	-		(Hate)	
					1	photocoupler in	stead o	f relay			
E40PH-24V DC	1	50	Х	-	Х	••	-	-	170x56x49 mm	Comment.	
E80RS	1	90	Х	-	-	••	-	-	(6.69x2.20x1.92 inch)		
E80IS	1	90	-	Х	-	••	-	-			
										THE THE	
E80PH-24V DC	1	90	-	Х	Х	••	-	-	248x66x53 mm		
E2x80RS	2	90	x	-	-	••	-	-	(9.76x2.60x2.09 inch)	MATTER TO THE PARTY OF THE PART	
E2x80IS	2	90	-	Х	-	••	-	-			
E200RS	1	180	x	-	-	••	-	-		100 mm - 100	
E200IS	1	180	-	Х	-	••	-	-		TIME TO BE SEEN THE S	
E200PH	1	180	X	-	Х	••	-	-		THE REAL PROPERTY OF THE PARTY	
E3x80IS	3	90	-	Х	-	••	-	-	248x105x59 mm		
E4x80IS	4	90	-	Х	-	••	-	-	(9.76x4.13x2.32 inch)	1	
E2x200RS	2	180	Х	-	-	••	-	-			
E2x200IS	2	180	-	Х	-	••	-	-		CENTS SEE WE BEILD BANK	
E2x200PH	2	180	X	-	X	••	-	-		Hard to the control of the control o	
E2x200PH-S	2	160	X	-	X	•••	-	-			
E2x200PHplus	2	160	X	-	X	•••	X	Х		10000000000000000000000000000000000000	
E400PH-S	1	400	Х	-	X	•••	-	-		c martina	
E400PHplus	1	400	Х	-	X	•••	X	Х			
UV-Compact	1	200	x ²	x ²	X ²	••• ³	-	Х	204x190x72 mm		

complete system with lamp/ballast control functions, integrated ballast, hour counter; 3 color LCD backlight; various configuration options:

UV/temperature monitor, alarm relays, electrode preheating, internal fan depending on lamp power

²option, ³LCD backlight (8.01x7.48x2.83 inch)







supply voltage 230V AC (196...249V / 45-65Hz) (depending on type) 24V DC ± 10% (other types on request)

IP Code IP 20, UV-Compact: IP 54 operation temperature max. 50°C (122°F) at T_c-point ambient temperature 0 - 40°C (32 - 104°F)



Electronic Ballasts/Lamp Drivers www.z-e-d.com

Electronic Ballasts Low Pressure up to 1200W



www.z-e-d.com Electronic Ballasts / Lamp drivers

Made in Germany - High Reliability

Electronic Ballasts Low Pressure up to 1200W

- R types for rack mounting
- omplete systems available (Modula)

	no. of lamps	max. lamp power [W]	4pin lamps	2pin lamps	electrode preheating	status indicator LED/relay	dimming	control	dimensions	form type (examples)		
E400PH	1	400	Х	-	Х	••	-	-	248x105x59 mm	A STATE OF THE STA		
E400PH-S	1	400	х	-	X	•••	-	-	(9.76x4.13x2.32 inch)			
E400PHplus	1	400	X	-	Х	•••	X	X		William State of the State of t		
E2x300PH-S	2	350	Х	-	Х	•••	-	-	248x150x59 mm			
E2x300PHplus	2	350	Х	-	X	•••	Х	X	(9.76x5.89x2.32 inch)			
E600PHplus	1	600	X	-	X	•••	Х	X		The second secon		
R400PHplus	1	400	Х	-	Х	•••	Х	Х	220x143,5x60 mm			
R2x300PHplus	2	350	Х	-	X	•••	Х	Х	(8,66x5,65x2,36 inch)			
R600PHplus	1	600	X	-	Х	•••	Х	X				
E3x300PHplus	3	400	Х	-	Х	•••1	Х	Х	269x317x83 mm			
E4x300PHplus	4	325	X	-	X	••• ¹	Х	Х	(10.57x12.46x3.27 inch)			
E2x600PHplus	2	600	X	-	Х	••• ¹	Х	X				
E1200PHplus	1	1200	X	-	X	•••	Х	Х				
							¹relay op	otional		18		
R3x300PHplus	3	400	Х	-	х	•••1	Х	Х	270x250x70 mm			
R4x300PHplus	4	325	Х	-	X	••• ¹	Х	Χ	(10.61x9.82x2.75 inch)			
R2x600PHplus	2	600	X	-	X	••• ¹	Х	Х				
R1200PHplus	1	1200	Х	-	X	•••	Х	Χ				
							¹relay o	otional				
Modula 3x200W	3	200	Х	-	Х	•••	х	Х	300x250x84 mm	25		
Modula 2x300W	2	300	Х	-	X	•••	х	Х	(11.81x9.84x3.31 inch)			
Modula 1x600W	1	600	Х	-	X	•••	х	Х				
ballast(s) combine plus various interf UV/temperature n remote switch, int 4 relay contacts, 4	aces nonito erlock	or, contro c, mains	ol/mo switc	nitorir h,	ng via RS4		ıs RTU	r				

Installation data

supply voltage 230V AC (196...249V / 45-65Hz) (other types on request) operation temperature max. 50° C (122°F) at T_c -point IP Code IP 20, rack types: IP 00 ambient temperature $0 - 40^{\circ}$ C (32 - 104° F)

Electronic Ballasts/Lamp Drivers www.z-e-d.com

Electronic Ballasts Medium Pressure up to 2500W



www.z-e-d.com Electronic Ballasts / Lamp drivers

Made in Germany - High Reliability

Electronic Ballasts Medium Pressure up to 2500W

- ompact design with internal ignitor (IG-types)
- extended cable length with external ignitor
- lamp dimming / digital and analog control interface
- lamp operation parameter sets can be set and modified by customer
- octive fan for optimal thermal management

	no. of lamps	max. lamp power [W]	internal ignitor	external ignitor	status indicator LED/relay	dimming	digital control	analog control	dimensions	
EVG-M650-IG	1	650	X	-	•••	X	X	x^1	248x150x59 mm	
EVG-M650	1	650	_	X	•••	X	×	x^1	(9.76x5.89x	Í

¹ default: 0...10V; optional 4...20mA 2.32 inch)



EVG-M2500-IG	1	2500	Х	-	•••	Х	Х	X^1
EVG-M2500	1	2500	-	Х	•••	Х	X	x^1
					1 default: 0	10\/: opt	ional 4	20m4

default: 0...10V; optional 4...20mA

279x317x81 mm (10.98x12.48x A 3.19 inch)



Installation data

 $supply \ voltage \qquad 230V\ AC\ (196...249V\ /\ 45-65Hz)\ (other\ types\ on\ request) \qquad operation\ temperature \qquad max.\ 50^{\circ}C\ (122^{\circ}F)\ at\ T_{c}-point$

IP Code IP 20 ambient temperature $0 - 40^{\circ}\text{C}$ (32 - 104°F)

Software for Ballast Control www.z-e-d.com

Software for Ballast Control



ZED Ballast Monitor

PC application bundled with a special ZED USB-to-RS485 adapter for operation control of ZED ballasts with digital interface

- check ballast settings and operation values
- O Data Logger



www.z-e-d.com Accessories for Electronic Ballasts

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Accessories for Electronic Ballasts

R600 Rack Mount Frame

- 6-slots for up to 6 single or dual lamp ballasts
- push-in card system using MOLEX JUNIOR FIT connectors (MK-type plugs, contacts and tools see below)
- open frame design for easy mounting and cooling, prepared for direct fan mounting (fans on request)

application example



407x236x267 mm (16.02x9.29x10.53 inch)



Rack assembly accessories

- MK-R plugs for ZED racks
- MK-S snap-in plugs for non-rack installations
- C-MK crimp contacts
- crimp tool MK
- extraction tool MK



Ballast Simulator SIMPHplus/SIM2xPHplus

- programming support tool for integrating
 ZED PHplus ballasts in PLC controlled UV applications
- operation simulation of UV systems without ballasts or lamps installed
- simulation of
 - o single/ dual lamp ZED PHplus ballasts
 - o lamp and ballast operation
 - o lamp and ballast faults
 - o RS485 communication

483x45x35 mm (19x1.77x1.38 inch)



Control Units for Electronic Ballasts www.z-e-d.com

Control Units for Electronic Ballasts



www.z-e-d.com Control Units for Electronic Ballasts

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Control Units for Electronic Ballasts

status LED/LCD **UV** monitoring of ballasts digital control temperature lamps switching IN analog OUT monitoring status relay dimensions form type ь ZCON mini 32 3 128 130x130x50 mm

- out-of-the-box UVC ballast control unit for up to 32 ZED PHplus ballasts / 128 lamps
- onnects to higher order systems via Modbus RTU
- switching input for remote start
- operation hour counter, switch cycle counter

- several add-ons available allowing flow monitoring, dynamic lamp dimming, reactor flushing...



(5.12x5.12x1.96 inch)

ZCON nano

12

48

 \times 1¹

2 •

70x95x55 mm

² LCD backlight only (2.75x3.73x2.16 inch)

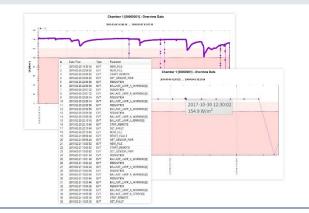
- out-of-the-box dimming interface for up to 12 ZED PHplus ballasts / 48 lamps
- operation hour counter, switch cycle counter



ZED LogDataViewer

Windows-PC application for import, visualization and evaluation of log data from ZCONmini II

- integrated data base for multiple reading points
- flexible configurable display options
- data export into CSV file



Installation data

supply voltage ZCON mini: 100...240V AC (other types on request)

ZCON nano: 230V AC (other types on request)

IP Code IP 0

(ZCON mini: IP20 at front with optional front panel)

mounting

to be installed in a closed cabinet ZCON nano: DIN rail mounting

operation temperature max. 45°C (113°F)

ambient temperature 0 -

0 - 40°C (32 - 104°F)

UV-C Monitors www.z-e-d.com

UV-C Monitor PRO11



www.z-e-d.com UV-C Monitors

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UV-C Monitors

- convert digital sensor signals into analog output values*
- switch cycle counter / operation hour counter with lamp replacement indication*
- system status forwarding using potential free relay contacts

* except for PRO3

	digital UV sensor IN	digital temperature sensor IN	420mA IN	photodiode signal IN	420mA 0UT	D10V OUT	status relay	status LCD	status LED	operation hour / switch cycle counter	ÖNORM M5873-1 compliant	DIN 19294-1 compliant	remarks
PRO11DI-I	2	-	1	1	1	-	2 ¹	•••	-	Х	Х	Х	¹UV pre alarm + alarm
PRO16DI-I	2	-	1	1	1	-	1	•••	-	X	Х	Х	
PRO30D-I	2 ¹	2 ¹	-	-	2	-	1	•••	-	Х	Х	Х	¹combinations of max. two digital sensors
PRO30D-U	2^1	2^1	-	-	-	2	1	•••	-	Х	Х	Х	
PRO3	-	-	-	1	-	-	1		•••1	-	-	-	¹ red <50%, yellow 5075%, green >75%

Installation data

PRO11DI-I

PRO16DI-I

PRO30D-I/U

PRO3









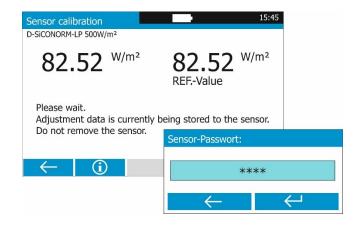
supply voltage		230V AC (other	types on request)	
IP Code	IP20; (IP65 at front with optional front cover)	IP 00	IP 00	IP 00
dimensions	96x48x114 mm (3,77x1,89x4,48 inch)	72,5x72,5x53 mm (2,85x2,85x2,08 inch)	70x95x50 mm (2,75x3,73x1,96 inch)	75x49x41 mm (2,94x1,92x1,61 inch)
mounting	DIN43700 cut-out	to be installed in	a closed cabinet DIN rail mounting	
operation temperature		max. 45°	C (113°F)	
ambient temperature		0 - 40°C (3	32 - 104°F)	

UV-C & Temperature Sensors www.z-e-d.com

Sensor in-field Recalibration

optional customer-specific feature for D-SiC-Sensors and ZED Smartmeter (see page 19), allows

- recalibration by plant manufacturer in his own test bench
- recalibration on location
 by customer or customer service
- 37.54 mm 37.
- the access to sensor calibration data
 is protected with a customer specific key
 to be entered on ZED SmartMeter
- the connection of a valid reference type sensor is checked by ZED SmartMeter



Software for Sensor Control and Setup

ZED Sensor Configurator

PC application bundled with a special ZED USB-to-RS485 adapter to connect digital ZED sensors to a Windows-PC

- set/change ModBus address of D-SiC UV sensors
- setting up digital ZED sensors with analog signal output (D-SiC-I/U)
- O Data Logger



www.z-e-d.com UV-C & Temperature Sensors

Made in Germany - High Reliability

UV-C & Temperature Sensors

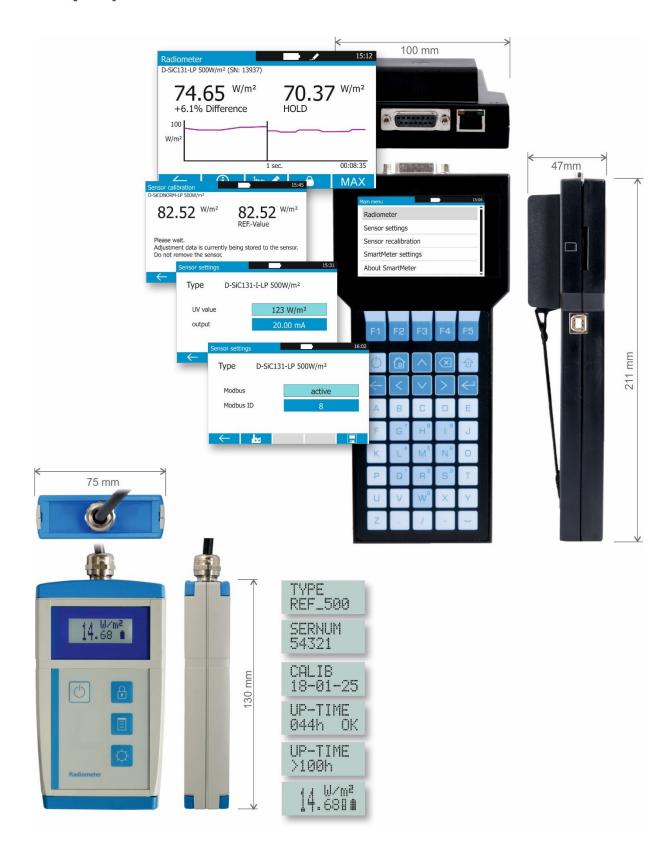
- Ø digital types with RS485/ZCON/ModBus RTU
- O low pressure (-LP) and medium pressure (-MP) types available
- D-SiC-types = optimum signal resolution covering the entire measurement range
- up to 30m cable length for digital signal transmission
- ✓ facility sensors according to OENORM M5873-1: 2020-01 and DIN 19294-1: 2020-08
- ✓ reference sensors according to OENORM M5873 3: 2020-01 and DIN 19294-3: 2020-08

	digital interface	in-field recalibration ¹	420mA	02/5/10V	adjustable by customer ¹	ÖNORM M5873-1	DIN 19294-1 compliant	reference sensor	photodiode signal²	temperature in °C	mounting form type (examples)
D-SiC131	Х	Х	-	-	-	-	-	-	-	-	pipe thread ISO228 G ¹ / ₄
D-SiC131-I	-	Х	Χ	-	X	-	-	-	-	-	front: 10bar, 1.4404, AF22x70mm
D-SiC131-U2/U5/U10	-	Х	-	х	Х	-	-	-	-	-	
D-SiC133	Х	Х	-	-	-	-	- '	- '	-	-	pipe thread ISO228 G¾
D-SiC133-I	-	Х	Х	-	Х	-	-	-	-	-	front: 10bar, 1.4404, AF32x70mm
D-SiC133-U2/U5/U10	-	Х	-	х	Х	-	-	-	-	-	
D-SiCT141	Х	Х	-	-	-	-	-	-	-	-	pipe thread ISO228 G¼,
D- SiCT141-I	-	Х	Х	-	Х	-	-	-	-	-	front: 10bar, Teflon, AF22 Ø25x71mm
D- SiCT141-U2/U5/U10	-	х	-	х	х	-	-	-	-	-	
D-SiCONORM	Х	Х	-	-	-	Х	Х	-	-	-	ÖNORM/DIN measure-
D-SiCONORM-I	-	Х	х	-	Х	х	х	-	-	-	ment window required, 1.4305, length 93mm
D-SiCONORM-U2/U5/U10	-	Х	-	х	Х	Х	Х	-	-	-	
D-SiCDVGW	Х	Х	-	-	-	Х	Х	-	-	-	ÖNORM/DIN measure-
D-SiCDVGW-I	-	Х	Х	-	Х	Х	Х	-	-	-	ment window required, 1.4305, length 93mm
D-SiCDVGW-U2/U5/U10	-	Х	-	х	Х	х	х	-	-	-	
D-SiCONORM-LP-REF 500 W/m ²	Х	-	-	-	-	-	-	Х	-	-	ÖNORM/DIN measure-
D-SiCONORM-LP-REF 250 W/m ²	Х	-	-	-	-	-	-	Х	-	-	ment window required, 1.4305, length 93mm
D-SiC-SLS006 UV-C sensor with lateral UV deterelative UV values in "digits" or "		-	-	-	-	-	-	-	-	-	not watertight to be mounted in a quartz tube 1.4404, Ø20x85mm,
SiCOO1	-	-	-	-	-	-	-	-	X	-	pipe thread ISO228 G ¹ / ₄ , front: 10bar, 1.4404, AF19x49mm
SiCTO01	-	-	-	-	-	-	-	-	Х	-	pipe thread ISO228 G¼, front: 10bar, Teflon, AF17 Ø20x57mm
SiC-SV01	-	-	-	-	-	-	-	-	Х	-	not watertight, 1.4305, Ø17,5x38,5mm
D-ST001 temperature sensor for measurement in liquids or gases	X	-	-	-	-	-	-	-	-	Х	pipe thread ISO228 G¼, 1.4404, AF19x64mm
D-ST002 temperature sensor for measurement on surfaces	Х	-	-	-	-	-	-	-	-	Х	mounting hole, diameter: 6mm 1.4404, AF19x61mm

¹on request ²external signal amplification or ZED UV monitor required

Radiometer & Display Devices www.z-e-d.com

Radiometer & Display Devices



Radiometer & Display Devices

ZED SmartMeter

operating and display device for digital ZED sensors with graphical display

- UV-C Reference Radiometer
 if used with ZED Reference Sensor
 D-SiCONORM-LP-REF
 (exceeding the specified operating hours
 of a connected reference sensor is indicated)
- UV-C meter
- O Data Logger
- set/change ModBus address of D-SiC UV sensors setting up digital ZED sensors with analog signal output (D-SiC-I/U)
- graphical measurement-progress indication
- sensor information: sensor-ID, operating hours, date of last adjustment/calibration
- the SmartMeter does not have to be recalibrated



ZED TinyMeter

operating and display device for digital ZED sensors with alphanumeric display, optimized for cost sensitive applications

- sensor information: sensor-ID, operating hours, date of last adjustment/calibration
- \bigcirc the TinyMeter does not have to be recalibrated



Lamps, Sleeves & Sockets www.z-e-d.com

...by leading lamp manufacturers

Lamps, Sleeves & Sockets

 for use in water disinfection, air treatment and special applications

UVC Low Pressure Lamps

lamp power range: 4...155W available outer diameter: 15mm, 19mm rated lamp life hours: 12000...16000h quartz types: ozone free /

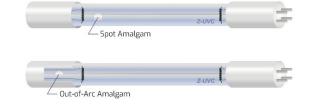
ozone generating



Low Pressure Amalgam Lamps

lamp power range: 40...1000W available outer diameter: 15...38mm rated lamp life hours: 12000...16000h quartz types: ozone free /

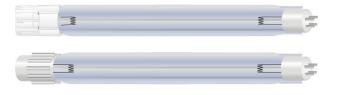
ozone generating



- Low Pressure Amalgam Lamps decrease the number of lamps in the treatment systems
- yield up to more than three times the UVC output compared to standard UVC lamps of the same dimension

PPT Lamps

lamp power range: 250...1000W lamp diameter: T9, T10, T12 rated lamp life hours: 12000...16000h



- Optimized amalgam lamps for water treatment applications
- Onstant UV output in a wide range of water temperatures at full power
- O Predictable UV output at all dimming levels even on very low and very high water temperatures

www.z-e-d.com Lamps, Sleeves & Sockets

...by leading lamp manufacturers

Lamps, Sleeves & Sockets

 for use in water disinfection, air treatment and special applications

Quartz Sleeves

outer diameter: 15...100mm length: up to 2200mm wall thickness: 1...3mm

quartz types: standard (use in water/air disinfection)

special (transmission below 200nm)



⊘ use for protecting Low Pressure UV-C Lamps, Amalgam Lamps, Medium Pressure Lamps

Sockets & Contacts

- plastic socket F4P for lamps up to 1A
- ceramic socket KF4P for 4pin lamps up to 10A
- ceramic socket KF2P for 2pin lamps up to 6A
- ceramic socket KF2P MDK for 2pin G13 lamps
- ceramic socket KF2G11 for 4pin 2G11 lamps
- crimp contacts C-KF
- crimp tool KF
- insertion tool KF
- extraction tool KF



PPT Optimized Amalgam Lamps www.z-e-d.com

Made in Germany - High Reliability

PPT Optimized Amalgam Lamps up to 1000W

The UV-output of low-pressure amalgam UV-lamps is strongly dependent on temperature conditions. Small changes of ambient temperature could result in a significant drop of UV-output. The same effect can be noted when a lamp is operated in dimmed mode. Since the lamp dissipates less heat if operated with less power, dimming the lamp is changing its temperature – thus significant variations in UV-output might occur. These variations may be even greater the more the ambient temperature is changing.

PPT Lamps generate very predictable and stable UVoutput values for all dimming levels in a wide range of environmental temperature. Due to the high stability, higher peak design power can be achieved – resulting in a higher UV-output. Besides stable and predictable UV-output, using PPT lamps may save energy and hardware equipment

PPT-Set

- = Amalgam Lamp + ZED electronic Ballast + Quartz Sleeve
- Optimized amalgam lamps for water treatment applications
- Constant UV output in a wide range of water temperatures at full power
- Predictable UV output at all dimming levels even on very low and very high water temperatures
- Standard lamp dimensions
 - existing UV system designs can be upgraded for better performance
- ✓ 'Out of arc' amalgam lamps 250 1000W (= T9, T10 or T12)
 can be used as basis for PPT lamp designs
- Ready to use
 - T10 and T12 'out of the box' PPT lamp-ballast sets are available containing PPT lamp, suitable quartz sleeve and specific electronic ballast



⊗ Best energy efficiency = best cost efficiency = best carbon footprint



www.z-e-d.com Excimer Lamp Systems

Made in Germany - High Reliability

Excimer Lamp Systems for 172nm & 222nm

Mercury-free excimer lamp technology for fast and efficient ozone generation using 172nm radiation, producing a power more ozone while at the same time retaining a much higher production efficiency compared to mercury low-pressure systems.



Excimer Lamp Systems for 172nm

- = Excimer lamp + ZED Electronic Ballast + High Voltage Transformer

- no infrared generation
- three lamp sizes available currently:

lamp power: 40W, 50W, 60W

ozone output: 2...6 g/hlamp lifetimes: ~5000h

- oready to be integrated into customers applications
- testing kit including reactor available for evaluation



S-EVG-24-EXC - Excimer Lamp Driver for 222nm

- 1x20W or 2x20W twin lamp operation (depending on configuration)



(example: 20W excimer lamp)



ZED Ziegler Electronic Devices GmbH ...more than 25 years of experience



ZED Ziegler Electronic Devices GmbH is a Thuringian company founded in August 2001 using experience gathered since 1996. As a result of increasing activities the once small firm has been expanded into a larger company. The first office building in Oehrenstock became to small and ZED moved to their new facility in Langewiesen/Ilmenau in 2007.

ZED Ziegler Electronic Devices GmbH:

- technology driven
- customer focussed
- highly qualified team

ZED business activities include the development, production and sales of reliable and efficient electronic driver systems designed to meet the special requirements within the purification and disinfection industry.

Standard accessories, classical and highly innovative solutions complement each other. A thorough understanding of the purification business requirements enables ZED to create the next generation accessories for UV systems, e.g. digital sensors, digital controlled electronic ballasts and several control units for sensors and ballasts.



The PCB assembly process gets done on a modern SMT line accomplished by several pick and place machines. ZED has just upgraded its production capability with brand-new state-of-the-art production equipment, like our selective soldering systems.

Our increased throughput now allows for higher volumes and updated pricing options.

- best quality products
- co-operative customer relations
- realization of individual solutions
- development and improvement of innovative technologies

