

Aviation Security Obstruction Lighting Systems

Edition 11.2



Reliable solutions for all requirements of obstruction lights

By the development of intelligent, communicative LED obstruction light system Pfannenberg provides not only the wind energy industry with an entirely new impulse to technological solutions for the identification of aviation obstacles.

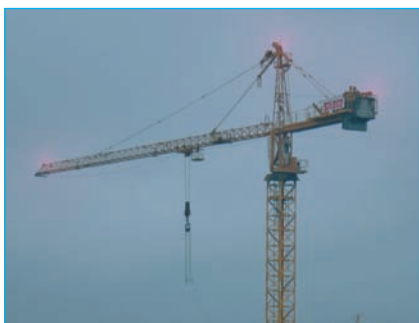
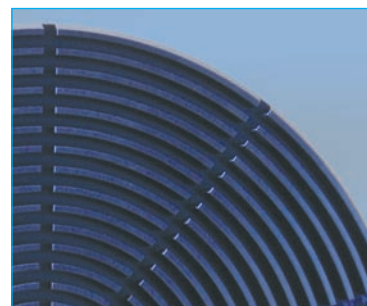
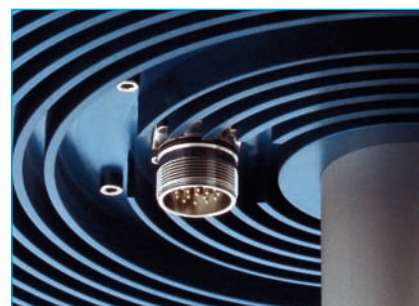
New Generation: The Pfannenberg Obstruction Light Concept

Long-life technology: For the first time, obstruction lights “accompany” your wind power plants during their entire life cycle.

Intelligent function management for the highest possible availability with a constant signal quality and under all ambient conditions.

Communication: Built-in GPS receiver, twilight sensor and as an option a radio module for each system.

Plug & Play: After the connection to a power supply source, each obstruction light is immediately ready for use without any additional accessories.



Compactly integrative

Pfannenberg LED obstruction lights of the latest generation completely integrate the control and communication modules inside the compact beacon housing. One side effect coming along with this feature: Weight reduction of more than 25% in comparison to conventional lightning systems.

In case of the replacement of older beacons, Pfannenberg obstruction lights can be connected to any existing UPS systems and due to various installation kits we are able to adapt the light to almost all mechanical interfaces.



Strong in communication

Continuous communication with the embedded sensors and the obstruction lights of all wind turbines integrated into the respective park concept, creates easily a homogeneous structure of system behaviour.

This will be realized by the optional radio module built into the beacon housing. All participating beacons of this so called “Mesh-Network” of one or more connected wind farm, communicate via this interface to synchronize day/night switchover and the control of the light intensity according to the visibility measurement.

LED Obstacle Lights

POL 10, POL 32



LED obstacle lights, AVV-approved, conforms to ICAO, Annex 14, Volume 1, Chapter 6

- omnidirectional light with a radiation angle of 360° for operation at night and at twilight (night identification of aviation obstacles)
- integrated function monitoring with potential-free fault contact
- extremely long service life of over 50,000 hrs., hence maintenance-free
- optionally equipped with mounting-friendly plug contact

POL 10:

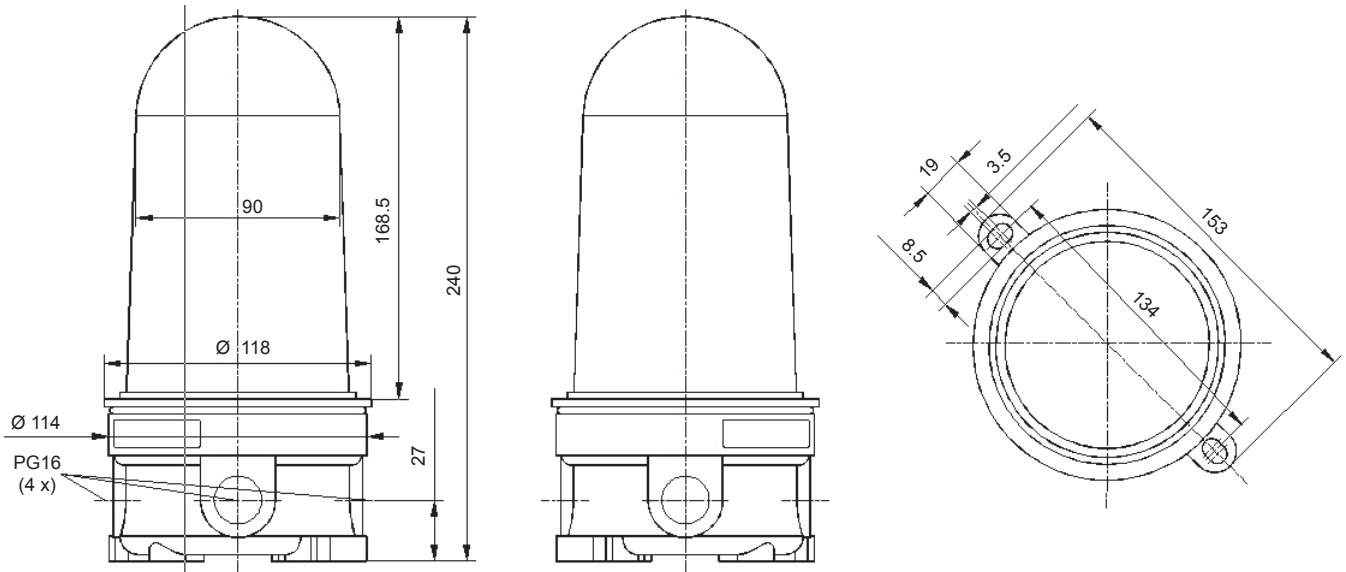
- 2 in 1: optional completely redundant construction of LED, electronics and power supply in one housing. A 2nd light is therefore not necessary.
- automatic switching over to standby light in case of error or by means of external control system

AVV	ICAO	IP 68	+ 55 °C
Approval (POL 10)	Approval (POL 10, POL 32)	Protection system	Operating temperature

Electrical data		POL 10			POL 32			
Rated voltage		115 / 230 V AC	48 V DC	12 / 24 V DC	115 / 230 V AC	48 V DC	12 / 24 V DC	
Rated frequency		50 Hz / 60 Hz			50 Hz / 60 Hz			
Operating range		85 V – 265 V	40 V – 57 V	9.6 V – 28.8 V	85 V – 265 V	40 V – 57 V	9.6 V – 28.8 V	
Current consumption, determined arithmetically	115 V	60 mA			96 mA			
	230 V	40 mA			45 mA			
	48 V		180 mA			270 mA		
	24 V			350 mA			430 mA	
	12 V			600 mA			800 mA	
Fault contact	NC						max. 230 V, 80 mA	

Mechanical data		POL 10-M	POL 10-M-R	POL 10-M-RA	POL 32-M
Operating mode		continuous light			
Light source		LED array (red)	2 x LED array		LED array (red)
Version	monitored (standard)	•	•	•	•
	redundant		•	•	
Activation of standby light in case of error by means of			external switching	automatic switching	
Light intensity (DIN 5037)		> 10 cd			> 32 cd
Lens colour		clear			
Light colour		aviation red			
Beam angle	vertical	approx. ± 35°			
	horizontal	360°			
Operating temperature		- 40 °C ... + 55 °C			
Storage temperature		- 40 °C ... + 70 °C			
Relative humidity		100%			
Protection system according to EN 60529		IP 68			
Duty cycle		100%			
Service life of light source		> 50,000 h			
Material	lens	polycarbonate (PC)			
	base	polybutylene terephthalate (PBT)			
Mounting		direct mounting			
Connecting terminals		0.5 – 1.5 mm ² fine wire - H05(07)V-K 0.5 – 2.5 mm ² single wire - H05(07)V-U			
Weight		approx. 750 g			

Dimensions



Ordering details

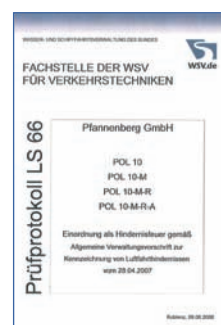
Article numbers	POL 10-M	POL 10-M-R	POL 10-M-RA	POL 32-M
Rated voltage				
115 / 230 V AC	211 05 64 1 005	211 05 64 1 011	211 05 64 1 010	211 05 68 1 005
48 V DC	211 05 65 1 005	211 05 65 1 011	211 05 65 1 010	211 05 66 1 005
12 / 24 V DC	211 05 63 1 005	211 05 63 1 011	211 05 63 1 010	211 05 67 1 005

Options / Accessories

Plug
connec-
tor

Conformity to standards

The lights complies with the requirements of ICAO, Annex 14, Volume 1, Chapter 6. The lights are approved in Germany in accordance with the General Administrative Rules for the Identification of Aircraft Obstructions (AVV).



LED Hazard Beacons

POL 170W-R, POL 2.000R



LED hazard beacons for the night identification of aviation obstructions such as wind energy turbines and high buildings/structures

- dimmable light intensity depending upon the visual range due to
- integrated degradation and function monitoring of the LEDs
- integrated lightning protection
- passive cooling; no wearing parts requiring maintenance
- extremely long useful life of more than 20 years (depending upon ambient temperature)
- extreme vibration resistance due to LED technology
- sea-water resistant housing material
- mechanically compatible to combi lights
- integrated GPS for synchronisation of several lights
- integrated twilight switch for switching between day/night operation
- integrated data logger for visibility adjustment



Approval
(POL 170W-R,
POL 2.000R)



Approval
(POL 2.000R)



Sea water
resistance



Protection
system



Operating
temperature

Electrical data	POL 170W-RED	POL 170W-RED-ES ¹	POL 2.000R
Rated voltage	24 V DC (15 - 30 V DC)		
Power consumption @ 100%	25 W	25 W	90 W

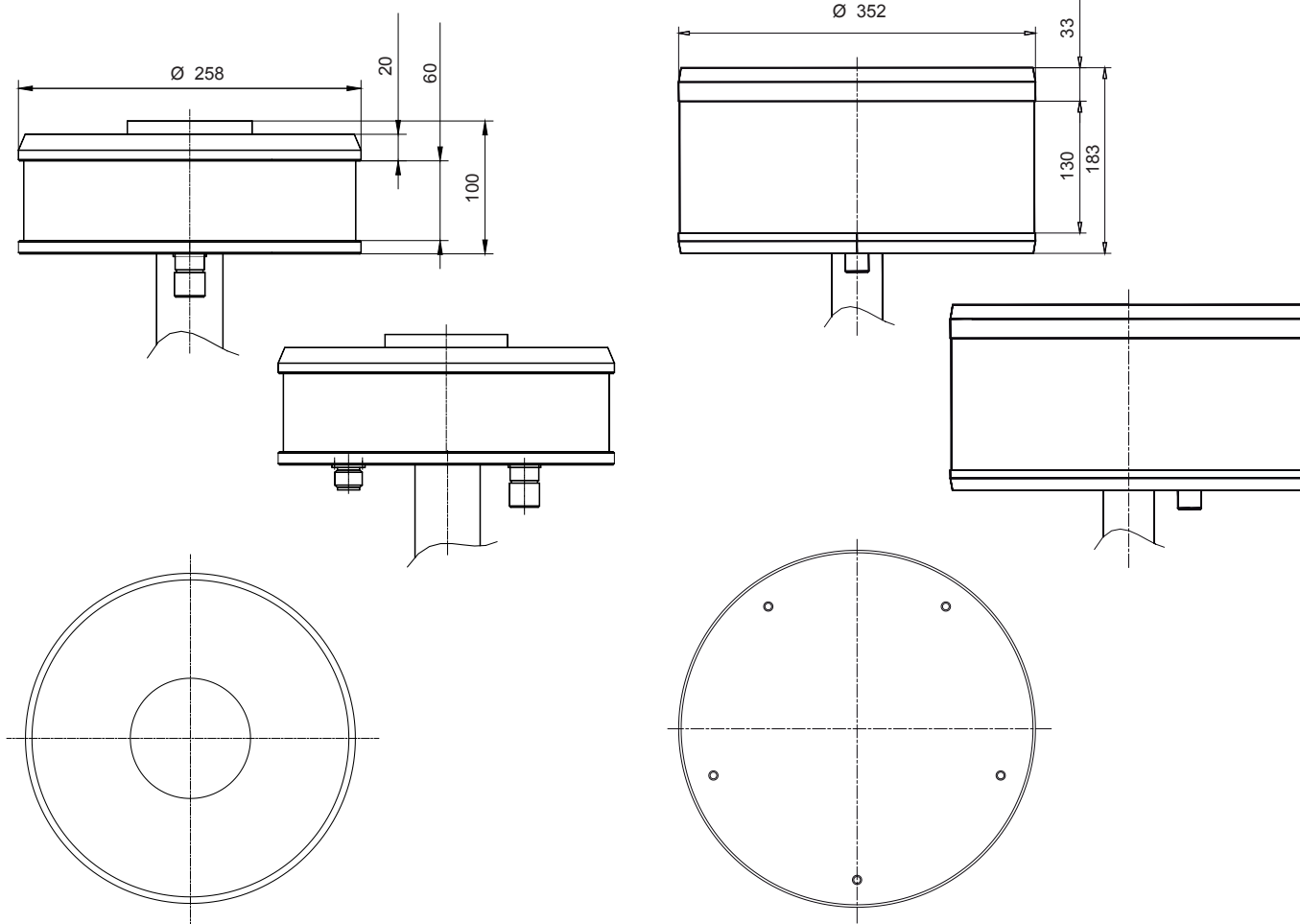
Mechanical data	POL 170W-RED	POL 170W-RED-ES ¹	POL 2.000R
Operating mode	blinking light	blinking light	continuous or blinking light
Light source	18 high output LEDs	144 medium output LEDs	24 high output LEDs
Blinking frequency	1 s ON - 0,5 s OFF - 1 s ON - 1,5 s OFF	1 s ON - 0,5 s OFF - 1 s ON - 1,5 s OFF	20/min. or 40/min. (type B) steady (type C)
Light intensity (DIN 5037)	170 cd according to AVV	170 cd according to AVV	2,000 cd according to ICAO
Intensity control	30% / 10% (only in connection with a visibility measuring device)		
Lens colour	clear		
Light colour	aviation red		
Operating temperature	- 40 °C ... + 50 °C		
Storage temperature	- 55 °C ... + 55 °C		
Relative humidity	100%		
Protection system according to EN 60529	IP 68		
Duty cycle	100%		
Service life of light source	> 100,000 h @ 25 °C		
Material	lens	polymethyl methacrylate (PMMA), UV resistant	
	housing	sea water-resistant aluminium (anodised) and sea water-resistant stainless steel	
Type of connection	plug connection, Hummel M23		
Weight	8 kg	15 kg	15 kg
Approvals	AVV	AVV	ICAO / AVV
ICAO type	-	-	Medium Intensity, type B or C

¹ ES = Extended Specification according to AVV

Dimensions

POL 170W-RED

POL 170W-RED-ES / POL 2.000R



Ordering details

Article numbers	POL 170W-RED	POL 170W-RED-ES	POL 2.000R-B	POL 2.000R-C
Standard	2146131010	21461631011	21464631004	21464631006
with radio transmitter	2146131013	21461631012	21464631005	21464631007

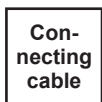
Options / Accessories



Article number:
see page 9



Article number:
see page 10



Article number:
see page 10

Conformity to standards

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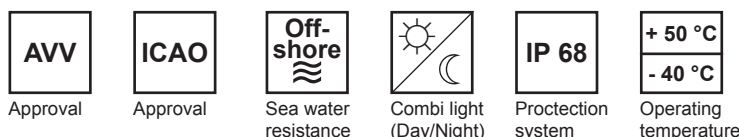


LED (Combi) Hazard Beacons POL 20.000/2.000R POL 20.000/170W-R, POL 20.000/2.000W



LED hazard beacons for the night identification of aviation obstructions such as wind energy turbines and high buildings/structures

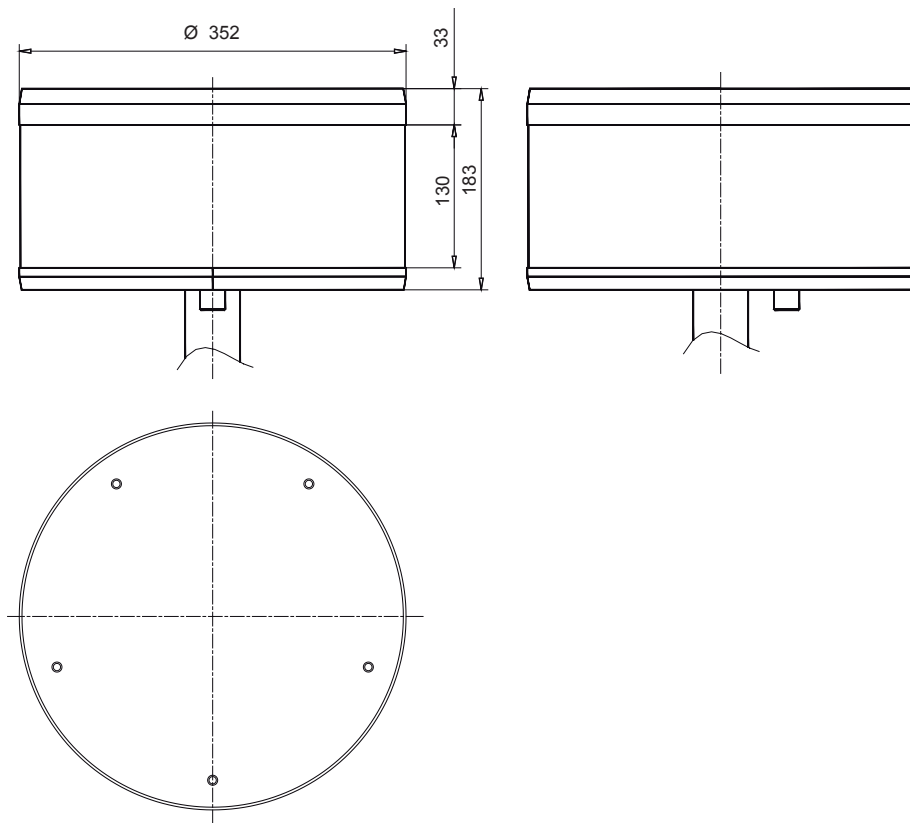
- dimmable light intensity depending upon the visual range due to
- integrated degradation and function monitoring of the LEDs
- integrated lightning protection
- passive cooling; no wearing parts requiring maintenance
- extremely long useful life of more than 20 years (depending upon ambient temperature)
- extreme vibration resistance due to LED technology
- sea-water resistant housing material
- mechanically compatible to combi lights
- integrated GPS for synchronisation of several lights
- integrated twilight switch for switching between day/night operation
- integrated data logger for visibility adjustment



Electrical data	POL 20.000/2.000R-C	POL 20.000/170W-RED-ES	POL 20.000/2.000R-B	POL 20.000/2.000W
Rated voltage	24 V DC (15 - 30 V DC)			
Power consumption @ 100%	240 W / 90 W	240 W / 25 W	240 W / 90 W	240 W / 90 W

Mechanical data	POL 20.000/2.000R-C	POL 20.000/170W-RED-ES	POL 20.000/2.000R-B	POL 20.000/2.000W
Operating mode	continuous light		blinking light	
Light source	24 LEDs (white) & 24 LEDs (red)	24 LEDs (white) & 144 LEDs (red)	24 LEDs (white) & 24 LEDs (red)	24 LEDs (white)
Blinking frequency	20/min. or 40/min.	20/min. or 40/min. / 1 s ON - 0,5 s OFF - 1 s ON - 1,5 s OFF	20/min. or 40/min. / 20/min. or 40/min.	20/min. or 40/min. / 20/min. or 40/min.
Light intensity (DIN 5037)	20,000 cd according to ICAO			
day identification	2,000 cd acc. to ICAO			
night identification	2,000 cd acc. to ICAO	170 cd according to AVV	2,000 cd according to ICAO	2,000 cd
Intensity control	30% / 10% (only in connection with a visibility measuring device)			
Lens colour	clear			
Light colour	day identification: white; night identification: red			
Operating temperature	- 40 °C ... + 50 °C			
Storage temperature	- 55 °C ... + 55 °C			
Relative humidity	100%			
Protection system according to EN 60529	IP 68			
Duty cycle	100%			
Service life of light source	> 100,000 h @ 25 °C			
Material	lens: polymethyl methacrylate (PMMA), UV resistant; housing: sea water-resistant aluminium (anodised) and sea water-resistant stainless steel			
Type of connection	plug connection, Hummel M23			
Weight	15 kg			
Approvals	ICAO / AVV	AVV	ICAO / AVV	ICAO
ICAO type	Medium Intensity, type A&C	Medium Intensity, type A	Medium Intensity, type A&B	Medium Intensity, type A&A

Dimensions



Ordering details

Article numbers	POL 20.000/2.000R-C	POL 20.000/170W-RED-ES	POL 20.000/2.000R-B	POL 20.000/2.000W
Standard	21460631006	21460631011	21460631004	21460631008
with radio transmitter	21460631007	21460631012	21460631005	21460631009

Options / Accessories

Visibility sensor

Article number:
see page 9

Assembly kit

Article number:
see page 10

Connecting cable

Article number:
see page 10

Conformity to standards

The lights complies with the requirements of ICAO, Annex 14, Volume 1, Chapter 6. The lights are approved in Germany in accordance with the General Administrative Rules for the Identification of Aircraft Obstructions (AVV).



Accessories



Power Supply / Battery Backup

- power supply unit for the 230 V power supply / main supply of the entire cabinet
- charge monitor for generating the temperature-controlled battery charging current
- fuse (40 A) to protect the battery circuit
- two high-strength rechargeable batteries
- fan with connected thermostat for control
- terminal clamps for 230 V power supply, two beacon systems, visibility meter, RS485 terminal port and error signal loop

Technical data	for POL 170W-RED	for all others
Rated voltage	200 V ... 240 V / 3,5 A	200 V ... 240 V / 5 A
Rated frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Output voltage	24 V / 22 A	2 x 24 V / 22 A
Rated charge	51 Ah	51 Ah
Operating temperature	- 15 °C ... + 50 °C	- 15 °C ... + 50 °C
Storage temperature	- 20 °C ... + 65 °C	- 20 °C ... + 65 °C
Dimensions (HxWxD)	540 x 500 x 225 mm	540 x 500 x 225 mm
Weight	approx. 50 kg	approx. 50 kg

Ordering details	
Article numbers	Power Supply / Battery Backup
for POL 170W-RED	28011000002
for all others	28011000003



Visibility Sensor

The visibility sensor identifies different precipitation types, such as rain, drizzle, leet, snow and other weather-related constraint factors such as fog, mist or haze caused by smoke and sand. It allows a reliable determination of visibility over a range from 10 to 20,000 meters and is designed for both onshore and offshore use.

Technical data	Visibility Sensor
Rated voltage	electronics 12 ... 50 V DC
	hood heating 24 V AC/DC
Power consumption	incl. window heater 3 W @ 12 V DC
	incl. hood heating 65 W
Functional principle	optical forward scattering
Relay contacts	3 pieces, programmable visibility alarm thresholds and delays can be configured, error message
Serial ports	RS-232, RS 485
Analog exit	0 ... 1 mA, 4 ... 20 mA
Operating temperature	- 40 °C ... + 60 °C
Relative humidity	0 ... 100%
Protection system	IP 66
Dimensions (HxWxD)	199 x 695 x 404 mm
Weight	3 kg

Ordering details	
Article numbers	Visibility Sensor
PWD 20W	28013000001

Accessories



Thermo-Reflector

Use in regions with strong sunlight: The heat shield, made of 1 mm stainless steel sheet enhances the effectiveness of the passive cooling systems of obstruction lights of the Pfannenbergl POL series.

Ordering details	
Article numbers	Thermo-Reflector
POL-Thermo-Reflector	28013000004



Assembly kits

The range of accessories for Pfannenbergl obstruction lights includes several assembly kits, where the extent and compilation of components vary depending on the respective installation tasks.

In general, the Pfannenbergl package for the provision of obstructions lights and their installation also includes the corresponding sets.

Ordering details	
Assembly components	Article numbers
Mounting base, aluminium (seawater-resistant)	on request
Mounting pillar, aluminium (seawater-resistant)	
Outrigger, aluminium, as support for lightning arrester	
Fixing screw set stainless steel (A4) natural	
Stainless steel cable ties, natural, for outdoor use, minimum retention force 670 N	
Cable ties, plastic for indoor installation	
Sturdy UV and weather-resistant special cables of various lengths, finished on the lamp side with a Hummel M23 stainless steel connector. The side opposite the cable can be customized freely	
Cable glands, filler plugs and sealing plugs	
Cable lugs / cable end ferrules for replacement sets	
Fuses for replacement sets	
Service terminals	
Lighting arrester for installation at the outrigger	
Mounting magnet, rubberised, M6, 40 kg holding load, NdFeB magnet system, anisotropic, 88 x 8.5 mm, threaded pin M8x15; for power supply cabinet	
Mounting magnet, rubberised, M10, 175 kg holding load, NdFeB flat pot magnet, with female thread (galvanised); for power supply cabinet	

Overview	AVV	ICAO Type A	ICAO Type B	ICAO Type C	beacon w, red	beacon w, red ES	20,000 cd white	GPS	visibility control	logbook	onshore/offshore	transmitter
POL 10-M	●	●									●	
POL 10-M-R	●	●									●	
POL 10-M-RA	●	●									●	
POL 32-M			●								●	
POL 170W-RED	●				●			●	●	●	●	○
POL 170W-RED-ES ¹	●					●		●	●	●	●	○
POL 2.000R-B			●					●	●	●	●	○
POL 2.000R-C				●				●	●	●	●	○
POL 20.000/2.000R-C		●		●			●	●	●	●	●	○
POL 20.000/170W-RED-ES	●	●				●	●	●	●	●	●	○
POL 20.000/2.000R-B	●	●	●				●	●	●	●	●	○
POL 20.000/2.000W	●	●					●	●	●	●	●	○

● Standard, ○ Option

¹ ES = Extended Specification according to AVV

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Nord-Bayern

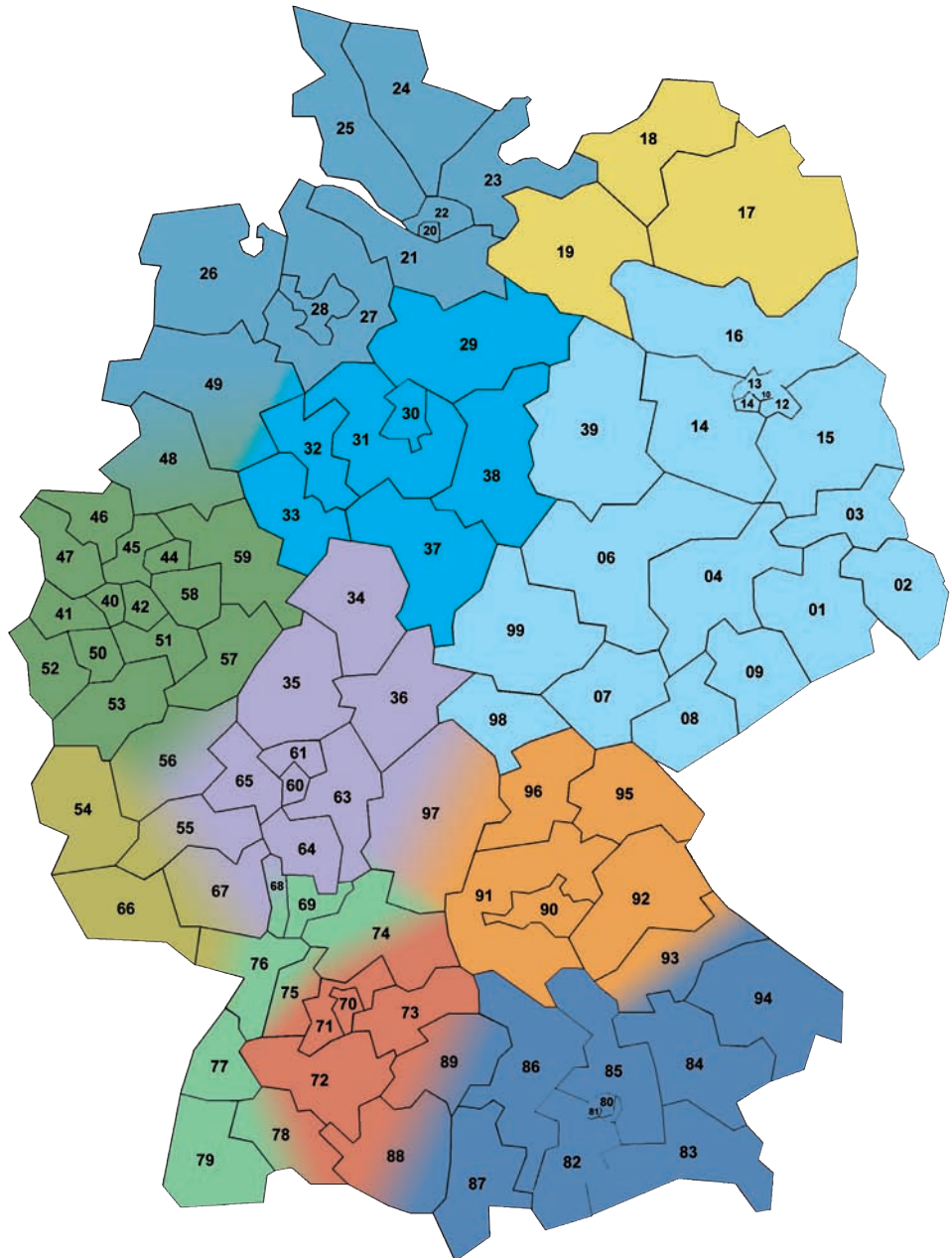
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