

# BAE *SECURA* Product Programme

## Stationary Batteries

Telecommunications



Uninterrupted power supply



Emergency lighting



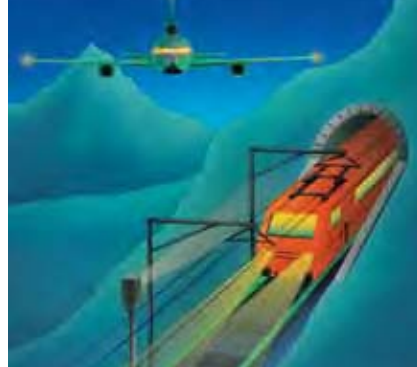
Solar energy























Energy utilities



Traffic









# BAE *SECURA* Product Programme

Applications		 			 
	   			   	
Type	OPzS-Block	OGi-Block	UPS-Block	OPzS-Cells	OGi-Cells
					
System	vented	vented	vented	vented	vented
Capacity	30 – 300 Ah	25 – 900 Ah	100 – 1200 W/C	200 – 3000 Ah	400 – 2400 Ah
Voltage	12V, 6V	12V, 6V, 2V	12V, 6V	2V	2V
Positive electrode	Tubular PbSb1. 6Se	Round grid PbSb1. 6Se	Round grid PbSb1. 6Se	Tubular PbSb1. 6Se	Round grid PbSb1. 6Se
Container	SAN	SAN	SAN	SAN	SAN
Electrolyte	Liquid	Liquid	Liquid	Liquid	Liquid
Typical discharge time	30 min – 10 h	5 min – 10 h	5 min – 1 h	1 h – 10 h	5 min – 10 h
Water refilling interval	> 3 years	> 3 years	> 3 years	> 3 years	> 3 years
Pole bushing	100 % tight	100 % tight	100 % tight	100 % tight	100 % tight
Operational life	18	16	12	20+	20
Cycles (IEC 896-1/2)	> 1200	> 1000	> 800	> 1500	> 1200
Ventilation (EN 50272-2)	100 %	100 %	100 %	100 %	100 %
Float voltage	2,23 V/cell	2,23 V/cell	2,25 – 2,27 V/cell	2,23 V/cell	2,23 V/cell

# Stationary Batteries



OGiV HP-Block	OPzV-Block	OGiV-Block	OPzV-Cells	SPzV-Battery	FT HC-Block
					
valve regulated	valve regulated	valve regulated	valve regulated	valve regulated	valve regulated
42 – 180 Ah	50 – 900 Ah	25 – 900 Ah	200 – 3000 Ah	120 – 1100 Ah	100 – 150 Ah
12V, 6V	12V, 6V, 2V	12V, 6V, 2V	2V	48V, 60V	12V
Round grid PbCaSn	Tubular PbCaSn	Round grid PbCaSn	Tubular PbCaSn	Tubular PbCaSn	Grid PbCaSn
PP	SAN	SAN	SAN	PP	ABS V0
GEL	GEL	GEL	GEL	GEL	AGM
10 min – 10 h	30 min – 10 h	5 min – 10 h	30 min – 10 h	30 min – 10 h	10 min – 10 h
N/A	N/A	N/A	N/A	N/A	N/A
100 % tight	100 % tight	100 % tight	100 % tight	100 % tight	100 % tight
10	18	15	20	15	10–12
350	> 1500	> 800	> 1500	> 1000	> 200
20 %	20 %	20 %	20 %	20 %	20 %
2,27 V/cell	2,25 V/cell	2,25 V/cell	2,25 V/cell	2,27 V/cell	2,27 – 2,30 V/Z

# More than just batteries ...



*NY Life insurance in Georgia  
19 OGi 1520*

BAE is your partner of choice when it comes to the planning, ontime delivery, installation, commissioning and subsequent permanent service of stationary battery systems of all types and for all applications.

We operate on a world-wide basis. We can also provide customised battery racks and cabinets if required. We also ensure proper disposal and subsequent recycling of old battery systems.



*Colt Telecom in Amsterdam  
24 OPzV 3000*



*UPS application in USA  
6 V 11 OGi 275*

*A typical compact battery system  
fitted into a cabinet.*



## **Our performance, continuing after the sale, is completed:**

- *Tested quality*
- *24-hours service facility*
- *Guaranteed returnability and recyclability*

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# BAE SECURA OPzS BLOCK

## Technical Specification for Stationary VLA - Block - Batteries

### 1. Application

BAE OPzS - Batteries belong to the most enduring lead acid batteries. They are suitable for stand - by operations as well as for capacity loads. They perfectly meet requirements for bridging times between 1h and more than 10 h.

Fields:

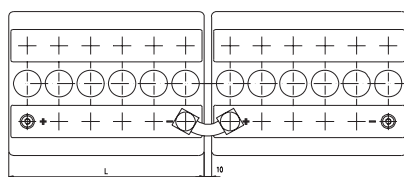
- Telecommunications
- Microwave radio systems
- Emergency lighting
- Power generation plants



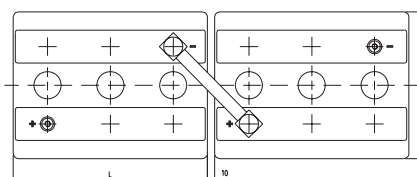
### 2. Types, capacities, dimensions, mass

Type	C10 20 °C Ah	C5 20 °C Ah	C3 20 °C Ah	C1 20 °C Ah	C8 25 °C Ah	Ri 1) mΩ	I <sub>sc</sub> 2) kA	length L mm	width W mm	height H (max.) mm	mass 3) kg	mass 4) kg	lead mass kg
Ue V / cell	1.80	1.77	1.75	1.67	1.75								
12 V 1 OPzS 30	35	28.5	24.3	16.5	33.8	24	0.5	272	165	280	15	21	12
12 V 2 OPzS 60	57	48.5	43.2	32.5	48.6	12.5	0.99	272	165	280	25.5	32	23
12 V 1 OPzS 50	50	42.5	38.4	26.6	56.0	19.2	0.64	272	205	385	29	40	22
12 V 2 OPzS 100	100	85	76.8	53.2	98.0	9.6	1.28	272	205	385	41	51	36
12 V 3 OPzS 150	150	128	115	79.8	147	6.4	1.92	380	205	385	56	71	51
6 V 4 OPzS 200	200	170	154	106	197	2.4	2.56	272	205	385	36	48	33
6 V 5 OPzS 250	250	213	192	133	246	1.92	3.20	380	205	385	47	62	42
6 V 6 OPzS 300	300	255	230	160	296	1.6	3.84	380	205	385	55	69	50

1, 2) internal resistance and short - circuit - current according to IEC 60 896-11 3) dry-charged 4) filled and charged



12 V 1 OPzS 50 to 12 V 3 OPzS 150



6 V 4 OPzS 200 to 6 V 6 OPzS 300

# Technical Specification for BAE SECURA OPzS BLOCK

## 3. design

positive electrode	tubular - plate with a polyester gauntlet and solid grids in a corrosion-resistant PbSb1.6SnSe - alloy
negative electrode	grid - plate in a low antimony alloy with long life expander
separation	microporous separator
electrolyte	sulphuric acid with a density of 1.24 kg/l,
container	high-impact, transparent SAN (Styrol-Acryl-Nitril)
lid	high impact SAN in dark grey colour
blocks with blind cells	4 V, 6 V, 8 V, 10 V
plugs	labyrinth plugs for arresting aerosol, optional ceramic plugs or ceramic funnel plugs according to DIN 40 740
pole - bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
kind of pole	M10 brass insertion
connectors	insulated solid copper connectors with cross-section of 90, 150 or 300 mm <sup>2</sup> or flexible insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
connector screw	M10, steel, insulated
kind of protection	IP 25 regarding to DIN 40 050, touch protected according to VBG 4.

## 4. Charging

IU - characteristic	$I_{max}$ without limitation $U = 2.23 \text{ V/cell} \pm 1\%$ , between 10°C and 55°C $\Delta U/\Delta T = -0.003 \text{ V/K}$ below 10°C in the monthly average
float current	15 mA/100 Ah, increasing to 30 mA/100 Ah at the end of life
boost charge	$U = 2.35$ to $2.40 \text{ V/cell}$ , time limited
charging time up to 90%	6 h with $1.5 \cdot I_{10}$ initial current, 2.23 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and block voltages and temperatures check connectors

## 7. Operational data

operational life	18 years, stand-by operation, float
water - refilling - interval	more than 3 years at 20°C
IEC 60 896-1 cycles	> 1200
self-discharge	approx. 3% per month at 20°C
operational temperature	-20°C to 55°C recommended 10°C to 30°C
battery according to	DIN 40 737, part 3
tests according to	IEC 60 896 - 11
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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## Technical Specification for Stationary VLA - Block - Batteries

### 1. Application

BAE OGi - batteries are robust and for high discharge - performances optimised lead-acid batteries. They are particularly suitable for bridging times of a few minutes to one hour.

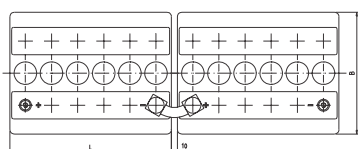
BAE OGi are used for Uninterrupted Power Supplies (UPS), to start diesel engines, and for emergency power supplies in switching stations of utilities, in signal systems of railway applications or in other stations.



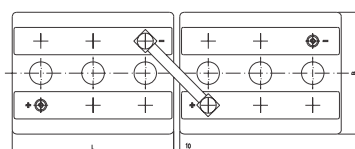
### 2. Types, capacities, dimensions, mass

Type	C10 20 °C Ah	C3 20 °C Ah	C1 20 °C Ah	C1/2 20 °C Ah	C1/6 20 °C Ah	C1/12 20 °C Ah	C8 25 °C Ah	Ri 1) mΩ	I <sub>sc</sub> 2) kA	length L mm	width B mm	height (max.) mm	mass 3) kg	mass 4) kg
U <sub>e</sub> V / cell	1,80	1,75	1,70	1,65	1,65	1,65	1,75							
12 V 1 OGi 25	38	26,5	20,5	16,5	10,8	8,4	43	16,80	0,73	272	205	385	22	33
12 V 2 OGi 50	54	45	35	28,5	19,6	15	62	8,40	1,46	272	205	385	30,1	41
12 V 3 OGi 75	79	63	50	41	28,3	21,6	82	5,60	2,20	272	205	385	38,2	49
12 V 4 OGi 100	105	81	65	53,5	37	28,2	102	4,20	2,93	272	205	385	47,3	58
12 V 5 OGi 125	135	105	78	68	47,1	35,1	130	3,36	3,66	380	205	385	62,3	78
12 V 6 OGi 150	165	129	92	83	57	41,6	150	2,80	4,39	380	205	385	70,5	86
6 V 7 OGi 175	190	151	106	98	66,6	48,4	184	1,20	5,13	272	205	385	37,7	49
6 V 8 OGi 200	228	176	131	112	76,6	55,2	203	1,05	5,86	272	205	385	41,9	53
6 V 9 OGi 225	250	198	140	126	82,6	60,2	242	0,93	6,59	380	205	385	51,6	68
6 V 10 OGi 250	270	220	161	139	91,6	65,3	262	0,84	7,32	380	205	385	55,7	72
6 V 11 OGi 275	300	243	182	152	99,3	70,2	281	0,76	8,05	380	205	385	58,8	75
6 V 12 OGi 300	320	267	202	165	106	75	301	0,70	8,79	380	205	385	63	79
2 V 24 OGi 600	684	528	427	336	230	165	610	0,12	17,57	205	272	385	41,9	53
2 V 30 OGi 750	810	660	539	417	275	196	727	0,09	21,96	205	380	385	55,7	72
2 V 36 OGi 900	960	801	606	495	318	225	887	0,08	26,36	205	380	385	63	79

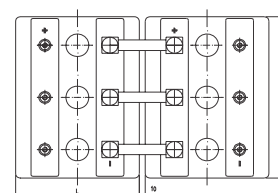
1,2) internal resistance and short - circuit - current from IEC 60 896-11      3) dry-charged      4) filled and charged



12 V 1 OGi 25 to 12 V 6 OGi 150



6 V 7 OGi 175 to 6 V 12 OGi 300



2 V 24 OGi 600 to 2 V 36 OGi 900

# Technical Specification for BAE SECURA OGi BLOCK

## 3. Design

positive electrode	round-grid plate with circular bars in a corrosion-resistant PbSb1.6SnSe alloy
negative electrode	flat plate with long life expander and low antimony alloy
separation	microporous separator
electrolyte	sulphuric acid of 1,24 kg/l
lid	SAN in dark grey colour
container	high impact, transparent SAN
blocks with blind cells	4 V, 6 V, 8 V, 10 V
plugs	labyrinth plugs for arresting aerosol, optional ceramic plug or ceramic funnel plug according to DIN 40740
pole bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
pole connector	M10, brass insert
connector screw	insulated solid copper connectors with cross-section of 90, 150 or 300 mm <sup>2</sup> or flexible insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
kind of protection	M10, steel, insulated IP 25 regarding to DIN 40050, touch protected according to VBG 4

## 4. Charging

IU - characteristic	$I_{\max}$ without limitation $U = 2,23 \text{ V/cell} \pm 1\%$ , between 10°C and 55°C $\Delta U/\Delta T = -0,003 \text{ V/K}$ below 10°C in the monthly average
float current	20 mA/100 Ah, increasing to 60 mA/100 Ah at the end of life
boost charge	$U = 2,35$ to $2,40 \text{ V/cell}$ , time limited
charging time up to 92%	6 h with $1,5 \cdot I_{10}$ initial current, 2,23 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	take down battery voltage, block voltage, temperature,

## 7. Operational data

operational life	16 years, stand-by conditions, float
water refilling interval	more than 3 years at 20°C
IEC 60 896-1 cycles	> 1000
self-discharge	approx. 3% per month at 20°C
operational temperature	-20°C to 55°C recommended 10°C to 30°C
dimensions according to tests according to safety standard, ventilation transport	DIN 40 737, part 3 IEC 60 896-11 EN 50 272-2 Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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# BAE SECURA UPS BLOCK

## Technical Specification for Stationary VLA - Block - Batteries

### 1. Application

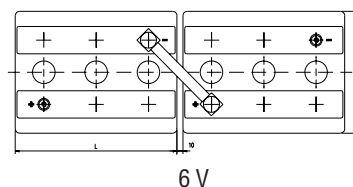
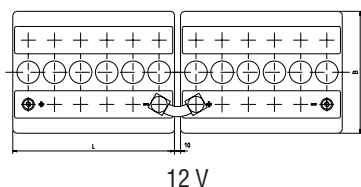
BAE UPS - batteries are robust and for high discharge - performances optimised lead-acid batteries. They are particularly suitable for bridging times of a few minutes to one hour.

The main application for BAE UPS are Uninterruptable Power Supplies (UPS) in the size of 50 to 250 kVA. Due to the low internal resistance the battery is perfectly suited to start diesel engines for the auxiliary power supply.



### 2. Types, capacities, dimensions, mass

Type	C <sub>10</sub>	P <sub>60min</sub>	P <sub>30min</sub>	P <sub>15min</sub>	P <sub>10min</sub>	P <sub>5min</sub>	Ri	I <sub>sc</sub>	length	width	height	mass	mass
	Ah	W/C	W/C	W/C	W/C	W/C	1) mΩ	2) kA	L mm	B mm	max. mm	3) kg	4) kg
Ue V / Cell	1.80	1.75	1.70	1.65	1.63	1.60							
12 V 1 UPS 100*	42	42.6	63.2	92.9	<b>120.9</b>	182.7	16.8	0.73	272	205	385	22.0	33
12 V 2 UPS 200	59.4	73.6	110.6	170.8	<b>219.5</b>	325.7	8.40	1.46	272	205	385	30.1	41
12 V 3 UPS 300	87	103.9	160.0	248.8	<b>316.2</b>	470.4	5.60	2.20	272	205	385	38.2	49
12 V 4 UPS 400	116	136.3	207.4	325.0	<b>412.9</b>	613.3	4.20	2.93	272	205	385	47.3	58
12 V 5 UPS 500	149	170.9	260.8	416.0	<b>526.4</b>	763.5	3.36	3.66	380	205	385	62.3	78
12 V 6 UPS 600	182	205.6	324.0	505.1	<b>636.1</b>	904.6	2.80	4.39	380	205	385	70.5	86
6 V 7 UPS 700	209	240.2	379.3	594.3	<b>744.0</b>	1051	1.20	5.13	272	205	385	37.7	49
6 V 8 UPS 800	251	274.8	434.6	683.4	<b>855.6</b>	1200	1.05	5.86	272	205	385	41.9	53
6 V 9 UPS 900	275	309.4	486.0	750.3	<b>922.6</b>	1308	0.93	6.59	380	205	385	51.6	68
6 V 10 UPS 1000	297	346.2	533.4	820.8	<b>1023</b>	1418	0.84	7.32	380	205	385	55.7	72
6 V 11 UPS 1100	330	385.1	584.8	887.7	<b>1109</b>	1525	0.76	8.05	380	205	385	58.8	75
6 V 12 UPS 1200	352	421.9	632.2	956.4	<b>1190</b>	1630	0.70	8.79	380	205	385	63.0	79



1,2) internal resistance and short - circuit - current according to IEC 60 896-11    3) dry-charged    4) filled and charged

\*100 W is the averaged power per plate at the 10 min rate.

# Technical Specification for BAE SECURA UPS BLOCK

## 3. Design

positive electrode	round-grid plate with circular bars in a corrosion-resistant PbSb1.6SnSe alloy
negative electrode	flat plate with long life expander and low antimony alloy
separation	microporous separator
electrolyte	sulphuric acid of 1,28 kg/l,
lid	SAN in dark grey colour
container	high impact, transparent SAN
blocks with blind cells	4 V, 6 V, 8 V, 10 V
plugs	labyrinth plugs for arresting aerosol, optional ceramic plug or ceramic funnel plug according to DIN 40 740
pole bushing	100 % gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
pole	M10, brass insert
inter-cell-connector	completely acid-tight lead connection through the partition wall
connector	insulated solid copper connectors with 90, 150 or 300 mm <sup>2</sup> ; flexibel insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
kind of protection	IP 25 regarding to DIN 40 050, touch protected according to VBG 4

## 4. Charging

IU - characteristic	$I_{\max}$ without limitation $U = 2,25 - 2,27$ V/cell between 10 °C and 55 °C $\Delta U/\Delta T = -0,003$ V/K below 10 °C in the monthly average
float current	20 mA/100 Ah, increasing to 60 mA/100 Ah at the end of life
boost charge	$U = 2,35$ bis 2,40 V/cell, time limited
charging time up to 92 %	6 h with $1,5 \cdot I_{10}$ initial current, 2,25 V/cell, 80 % C3 discharged

## 5. Discharge characteristics

reference temperature	20 °C
initial capacity	100 %
depth of discharge	normally up to 80 %
depth of discharges	more than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	take down battery voltage, block voltage, temperature

## 7. Operational data

operational life	12 years at stand-by operation, float
water refilling interval	more than 3 years at 20 °C
IEC 896-1 cycles	> 800
self-discharge	approx. 3 % per month at 20 °C
operational temperature	-20 °C to 55 °C recommended 10 °C to 30 °C
dimensions according to tests according to safety standard, ventilation transport	DIN 40 737, part 3 IEC 60896-11 EN 50 272-2 Batteries are not subject to ADR, if the conditions of the special rule 598 (chapter 3.3) are observed.



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## Technical Specification for Stationary VLA - Cells

### 1. Application

BAE OPzS - Batteries belong to the most enduring lead acid batteries. They are suitable for stand - by operations as well as for capacitive loads. They perfectly meet requirements for bridging times between 1h and more than 10 h.

Fields:

- Telecommunications
- Emergency lighting
- Microwave radio systems
- Power generation plants



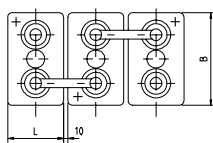
### 2. Types, capacities, dimensions, mass

Type	C10 20 °C	C5 20 °C	C3 20 °C	C1 20 °C	C8 25 °C	Ri 1)	I <sub>sc</sub> 2)	length h	width	height t (max.)	mass 3)	mass 4)	lead mass
U <sub>e</sub> V/cell	Ah	Ah	Ah	Ah	Ah	mΩ	kA	mm	mm	mm	kg	kg	kg
4 OPzS 200	210	175	156	114	205	0.95	2.16	105	208	420	12.2	17.2	11.9
5 OPzS 250	270	220	195	143	255	0.76	2.70	126	208	420	14.6	20.8	14.3
6 OPzS 300	320	262	234	170	304	0.63	3.24	147	208	420	17.2	24.3	16.8
5 OPzS 350	400	336	282	205	378	0.70	2.90	126	208	535	18.9	26.9	18.5
6 OPzS 420	490	400	339	245	452	0.58	3.48	147	208	535	22.2	31.5	21.7
7 OPzS 490	570	470	396	285	526	0.50	4.06	168	208	535	25.2	36.1	24.6
6 OPzS 600	670	560	474	330	657	0.47	4.32	147	208	710	31.9	44.8	31.2
8 OPzS 800	890	740	633	440	880	0.35	5.76	215	193	710	44.2	61.3	43.2
10 OPzS 1000	1120	930	789	550	1096	0.28	7.20	215	235	710	52.3	74.5	51.1
12 OPzS 1200	1340	1100	948	660	1312	0.23	8.64	215	277	710	62.1	88	60.7
12 OPzS 1500	1690	1400	1200	820	1672	0.22	9.18	215	277	855	80.4	114.3	78.6
16 OPzS 2000	2250	1850	1600	1100	2232	0.17	12.24	215	400	815	102.5	151.5	100.0
20 OPzS 2500	2810	2300	2000	1375	2792	0.13	15.30	215	490	815	129.8	193	127.0
24 OPzS 3000	3380	2800	2400	1640	3344	0.11	18.36	215	580	815	159.4	234.5	156.0

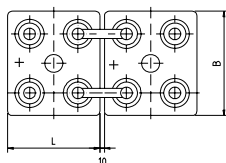
1, 2) internal resistance and short - circuit - current from IEC 60896-11

3) dry-charged

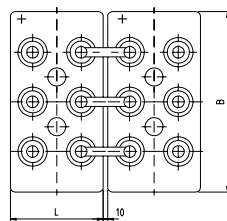
4) filled and charged



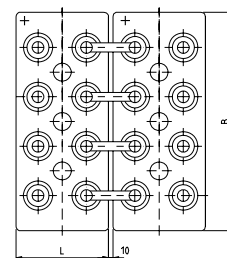
4 OPzS 200 to 6 OPzS 600



8 OPzS 800 to 12 OPzS 1500



16 OPzS 2000



20 OPzS 2500 to 24 OPzS 3000

# Technical Specification for BAE *SECURA OPzS*

## 3. Design

positive electrode	tubular - plate with a polyester gauntlet and solid grids in a corrosion-resistant PbSb1.6SnSe - alloy
negative electrode	grid - plate in low antimony alloy with long - life expander material
separation	microporous separator
electrolyte	sulphuric acid with a density of 1.24 kg/l,
container	high impact, transparent SAN (Styrol-Acryl-Nitril)
lid	SAN in dark grey colour
plugs	labyrinth plugs for arresting aerosol, optional ceramic plugs or ceramic funnel plugs according DIN 40 740
pole - bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
kind of pole	M10 brass insertion
connectors	insulated solid copper connectors with cross-section of 90, 150 or 300 mm <sup>2</sup> ; on request: flexible insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
connector screw	M 10, steel, insulated
kind of protection	IP 25 regarding DIN 40 050, touch protected according VBG 4.

## 4. Charging

IU - characteristic	$I_{max}$ without limitation $U = 2.23$ V/cell $\pm 1\%$ , between 10°C and 55°C $\Delta U/\Delta T = -0.003$ V/K below 10°C in the monthly average
float current	15 mA/100 Ah, increasing to 30 mA/100 Ah at the end of life
boost charge	$U = 2.35$ to 2.40 V/cell, time limited
charging time up to 88%	6 h with $1.5 \times I_{10}$ initial current, 2.23 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and block voltages and temperatures

## 7. Operational data

operational life	20+ years in stand-by operation, float
water - refilling - interval	more than 3 years at 20°C
IEC 896-1 cycles	> 1500
self-discharge	approx. 3% per month at 20°C
operational temperature	-20°C to 55°C recommended 10°C to 30°C
standard	DIN 40 736 part 1
tests according	IEC 60896 - 11
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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## Technical Specification for Stationary VLA - Cells

### 1. Application

BAE OGi - cells are suitable for safety batteries where operational safety and long operational life has top priority and high discharge currents during short discharge times and capacitive loads over longer discharge times are required.

They are used as standby source in power supply stations, transforming stations, UPS - stations, emergency light equipment acc. VDE 0108 and VDE 0107.

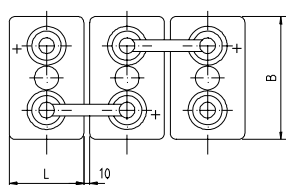
The round-grid plate used by BAE grant due to the high lead weight and the circular bars a long operational life and a very good high - current - performance. The straight - walled containers and the supported plates offer a high power - density related to the small foot-print. The transparent containers allows an all-round - control and they make service and maintenance easier.



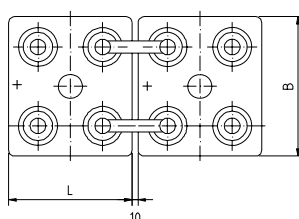
### 2. Types, capacities, dimensions, mass

Type	C10 20°C Ah	C5 20°C Ah	C3 20°C Ah	C1 20°C Ah	C1/2 20°C Ah	C1/6 20°C Ah	C8 25°C Ah	$R_i$ 1) mΩ	$I_{SC}$ 2) kA	length mm	width mm	height (max.) mm	mass 3) kg	mass 4) kg
Ue V/Zelle	1.80	1.80	1.79	1.75	1.65	1.55	1.75							
5 OGi 400	410	340	297	233	195	117	396	0.450	4.5	145	206	700	26.5	40
6 OGi 480	480	400	351	275	230	138	461	0.375	5.4	145	206	700	30.5	43
7 OGi 560	550	455	399	314	263	157	527	0.321	6.3	145	206	700	34.5	47
8 OGi 640	610	510	447	352	295	177	593	0.281	7.2	145	206	700	38.0	51
9 OGi 720	680	565	495	389	326	195	659	0.250	8.1	145	206	700	42.0	54
10 OGi 800	810	675	594	466	391	234	791	0.225	9.0	210	191	700	49.5	62
11 OGi 880	880	740	648	508	426	255	857	0.205	9.9	210	191	700	53.5	68
12 OGi 960	960	800	699	549	460	275	923	0.188	10.8	210	191	700	57.5	73.5
13 OGi 1040	1030	855	750	589	494	295	997	0.173	11.7	210	233	700	62.0	78
14 OGi 1120	1090	915	801	629	526	315	1063	0.161	12.6	210	233	700	66.0	84
15 OGi 1200	1160	970	849	667	559	334	1129	0.150	13.5	210	233	700	70.0	88
16 OGi 1280	1230	1025	897	705	590	353	1187	0.141	14.4	210	275	700	74.5	94
17 OGi 1360	1290	1075	945	741	621	371	1252	0.132	15.3	210	275	700	78.5	98
18 OGi 1440	1350	1130	990	777	651	389	1310	0.125	16.2	210	275	700	82.0	102
19 OGi 1520	1540	1285	1128	886	742	444	1491	0.118	17.1	210	360	675	87.5	125
20 OGi 1600	1610	1345	1179	926	776	464	1566	0.113	18.0	210	360	675	91.5	126
21 OGi 1680	1680	1405	1230	966	809	484	1632	0.107	18.9	210	360	675	95.0	128
22 OGi 1760	1750	1460	1278	1005	842	503	1697	0.102	19.8	210	360	675	99.0	130
23 OGi 1840	1820	1515	1329	1043	874	523	1763	0.098	20.7	210	360	675	103.0	133
24 OGi 1920	1880	1570	1377	1081	906	542	1821	0.094	21.6	210	360	675	107.0	135
25 OGi 2000	1950	1625	1425	1119	937	560	1887	0.090	22.5	210	440	675	112.0	148
26 OGi 2080	2010	1680	1470	1155	967	579	1953	0.087	23.4	210	440	675	115.5	150
27 OGi 2160	2070	1730	1515	1191	997	597	2011	0.083	24.3	210	440	675	119.5	153
28 OGi 2240	2130	1780	1560	1226	1027	614	2068	0.080	25.2	210	440	675	123.5	156.5
29 OGi 2320	2190	1830	1605	1261	1056	632	2126	0.078	26.1	210	440	675	127.5	158
30 OGi 2400	2250	1880	1650	1295	1085	649	2184	0.075	27.0	210	440	675	131.5	160

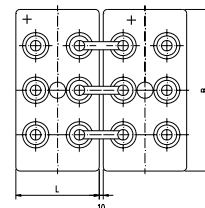
1, 2) internal resistance and short - circuit - current according to IEC 60896-11 3) dry-charged 4) filled and charged



5 OGi 400 to 9 OGi 720



10 OGi 800 to 18 OGi 1440



19 OGi 1520 to 30 OGi 2400

# Technical Specification for BAE *SECURA OGi*

## 3. Design

positive electrode	round-grid plate with low antimony alloy (1,6%), circular bars high lead weight
negative electrode	flat plate with long life expander and low antimony alloy
separation	microporous separator
electrolyte	sulphuric acid of 1.24 kg/l,
lid	halogene-free SAN in dark grey colour
container	high stability by transparent halogene-free SAN, straight-walled containers
plugs	labyrinth plugs for arresting aerosol, optional ceramic plugs or ceramic funnel plugs acc. DIN 40 740
pole bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
kind of pole connector	M10 copper insertion insulated solid copper connectors with cross-section of 90, 150 or 300 mm <sup>2</sup> or flexible insulated copper cables with cross-section of 50, 70, 95 or 120 mm <sup>2</sup>
pole screw	M10, steel, insulated
kind of protection	IP 25 regarding DIN 40 050, touch protected according VBG 4

## 4. Charging

IU - characteristic	$I_{\max}$ without limitation $U = 2.23 \text{ V/cell} \pm 1 \%$
float current	15 mA/100 Ah, increasing to 45 mA/100 Ah at the end of life
boost charge	$U = 2.40 \text{ V/cell}$ , time limited
charging time up to 90%	6 h with $1.5 \times I_{10}$ initial current, 2.23 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge	normally up to 80%
depth of discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery voltage, block voltage, temperature

## 7. Operational data

operational life	16 years at 20°C, stand-by operation, float
water refilling interval	> 3 years at 20°C
IEC 896-1 cycles	> 1200
self-discharge	approx. 3% per month at 20°C
operational temperature	-20°C to 55°C recommend 10°C to 30°C
dimensions according	DIN 40 736 part 1
tests according	IEC 60 896-11
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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# BAE *SECURA BLOCK – OGiV HP*

## Technical Specification for VRLA - Batteries OGiV HP

### 1. Application

BAE OGiV HP (high performance) - batteries are maintenance-free and designed for standby or float operation. Due to their low inner resistance they are well suited for medium and high-rate discharges.

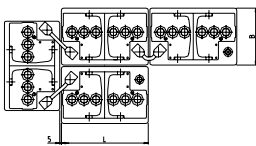
They are used for Uninterrupted Power Supplies (UPS), battery-operated power supplies in telecommunications, radio relay stations, emergency light equipment and leisure applications.

For regular cyclic applications we recommend the sister line GiV NOVA trans BLOCK.

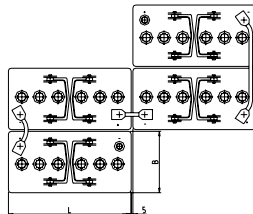


### 2. Types, capacities, dimensions, weights

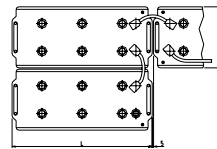
Type	C 10 Ah	length mm	width mm	height (max.) mm	mass kg	energy density Wh/kg	max. current A	recomm. connectors mm <sup>2</sup>
12 V OGiV 42 HP	42	244	175	190	17	29	250	35
12 V OGiV 55 HP	55	275	175	195	21	32	250	35-50
12 V OGiV 80 HP	80	344	172	238	31	31	350	35-50
12 V OGiV 105 HP	105	344	172	289	41	31	400	50
12 V OGiV 125 HP	125	513	223	226	50	30	600	50
6 V OGiV 180 HP	180	244	190	276	31	35	800	50-70



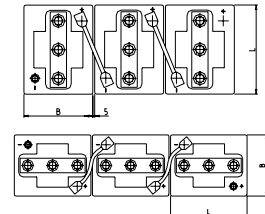
12 V OGiV 42 HP - 12 V OGiV 55 HP



12 V OGiV 80 HP - 12 V OGiV 105 HP



12 V OGiV 125 HP



6 V OGiV 180 HP

### 3. Design

positive electrode  
negative electrode  
separation  
electrolyte  
container, lid  
pole bushing  
terminal design

handles  
valve

connector

round-grid plate with circular bars in a corrosion-resistant PbCaSn alloy  
flat plate with long life expander and PbCaSn alloy  
microporous separator  
sulphuric acid of 1,26 kg/l, fixed as GEL by fumed silica  
impact-resistant polypropylen, coloured  
100% gas- and electrolyte-tight  
according to DIN 72311 part 4 (JEC 95-3. SAE) or M10 screw connection,  
12 V OGiV 42 HP (Ford terminals)  
integrated within the cover  
one valve per cell with flame arrestor,  
opening pressure 100 mbar, closing pressure 50 mbar  
flexible insulated copper cable, encapsulated bolted clamps

# Technical Specification for VRLA - Batteries OGiV HP

## 4. Charging

IU - characteristic	$I_{\max}$ without limitation $U = 2,27 \text{ V/cell} \pm 1\%$ , between 10°C and 45°C $\Delta U/\Delta T = -0,003 \text{ V/K}$ below 10°C in the monthly average
float current	20–30 mA/100 Ah
boost charge	$U = 2,35 - 2,40 \text{ V/cell}$ , time limited
charging time up to 95%	6 h with $1,5 \times I_{10}$ initial current, 2,27 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	25°C
initial capacity	approx. 95%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided
deep discharge recovery	the GEL design allows a complete recharging after an unwanted deep discharge

## 6. List of capacities, inner resistances and short-circuit currents

Type	Ri 1) mΩ	I <sub>sc</sub> 2) kA	C20 Ah	C10 Ah	C5 Ah	C3 Ah	C1 Ah	C1/2 Ah	C1/6 Ah
final discharge voltage V/cell V / block			1,80 10,80	1,80 10,80	1,78 10,68	1,77 10,62	1,74 10,44	1,70 10,20	1,58 9,48
12 V OGiV 42 HP	12,8	0,96	43,5	42	35,5	33	26	22	16
12 V OGiV 55 HP	9,5	1,31	58	55	47,5	44	34,5	29	21,5
12 V OGiV 80 HP	6,8	1,83	83	80	73	65	51	44	33
12 V OGiV 105 HP	6,0	2,08	108	105	95,5	87	68,5	56,5	39
12 V OGiV 125 HP	5,2	2,44	130	125	115	100	76	65	48
6 V OGiV 180 HP	2,0	3,12	186	180	167	151,5	115,5	92	65

1,2) internal resistance and short-circuit-current according to IEC 60 896-21

## 7. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and block voltages and temperatures check connectors

## 8. Operational data

classification according to EUROBAT	10 years, high performance
operational life	10 years in stand-by operation, float
maintenance-free	no topping-up during life
IEC 60 896-2 cycles	350
self-discharge	approx. 2% per month at 25°C
operational temperature	recommended: 10°C to 45°C -20°C to 10°C with reduced performance 45°C to 55°C only for short periods above 55°C not permitted
deep discharge recovery	very good
test standards	IEC 60 896-21, -22
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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# BAE SECURA OPzV BLOCK

## Technical Specification for Stationary VRLA - Block - Batteries

### 1. Application

BAE OPzV - Batteries belong to the best EUROBAT classification for maintenance free lead - acid - batteries: > 12 years, long life.

In applications with high requirements of operational safety and bridging times of 1h to more than 10 h the BAE OPzV is the right choice.

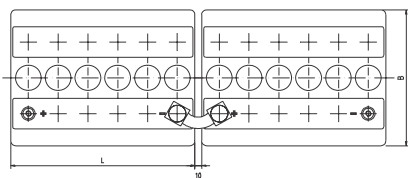
They are used as standby power sources in telecommunications, microwave radio stations, emergency light equipment and other equipments.



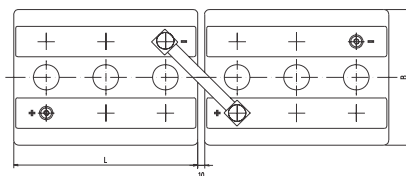
### 2. Types, capacities, dimensions, mass

Type	C10	C5	C3	C1	C8	Ri	I <sub>SC</sub>	length L	width W	height H (max.)	mass kg	lead mass kg
	20 °C Ah	20 °C Ah	20 °C Ah	20 °C Ah	25 °C Ah	1) mΩ	2) kA					
Ue V / cell	1.80	1.78	1.75	1.67	1,75							
12 V 1 OPzV 50	59	47	44	34	60	21.60	0.58	272	205	385	42.5	28
12 V 2 OPzV 100	107	97	88	69	108	10.80	1.15	272	205	385	50.5	38
12 V 3 OPzV 150	169	143	127	101	164	7.20	1.73	380	205	385	72	53
6 V 4 OPzV 200	219	192	173	129	212	2.70	2.30	272	205	385	48	35
6 V 5 OPzV 250	276	242	212	165	281	2.16	2.88	380	205	385	63	43
6 V 6 OPzV 300	326	291	255	200	336	1.80	3.45	380	205	385	70	50
2 V 12 OPzV 600	654	572	514	383	208	0.30	6.90	205	272	385	48	35
2 V 15 OPzV 750	828	721	630	489	278	0.24	8.63	205	380	385	63	43
2 V 18 OPzV 900	973	867	758	593	333	0.20	10.35	205	380	385	70	50

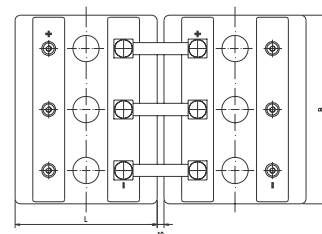
1, 2) internal resistance and short - circuit - current according to IEC 60 896-21



12 V 1 OPzV 50 to 12 V 3 OPzV 150



6 V 4 OPzV 200 to 6 V 6 OPzV 300



2 V 12 OPzV 600 to 2 V 18 OPzV 900

# Technical Specification for BAE SECURA OPzV BLOCK

## 3. Design

positive electrode	tubular plate with a polyester gauntlet and solid grids in a corrosion-resistant PbCaSn - alloy
negative electrode	grid plate in PbCaSn - alloy with long - life expander
separation	microporous separator
electrolyte	sulphuric acid with a density of 1.24 kg/l, fixed as GEL by fumed silica
container	high-impact, halogene-free SAN, grey coloured, UL rating 94 HB
lid	high-impact, halogene-free SAN, grey coloured, UL rating 94 HB
blocks with blind cells	4 V, 6 V, 8 V, 10 V
valve	one valve per cell with flame arrestor opening pressure approx. 100 mbar, closing pressure approx. 50 mbar
pole - bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
kind of pole	M10 brass insertion
connectors	insulated solid copper connectors with cross-section of 90 and 150 mm <sup>2</sup> or flexible insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
connector screw	M10, steel, insulated
kind of protection	IP 25 regarding to DIN 40050, touch - protected according to VBG 4.

## 4. Charging

IU - characteristic	$I_{\max}$ without limitation $U = 2.25 \text{ V/cell} \pm 1\%$ , between 10°C and 45°C $\Delta U/\Delta T = -0.003 \text{ V/K}$ below 10°C in the monthly average
float current	20 - 30 mA/100 Ah
boost charge	$U = 2.35 \text{ to } 2.40 \text{ V/cell}$ , time limited
charging time up to 90%	6 h with $1.5 \cdot I_{10}$ initial current, 2.25 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided
deep discharge recovery	the GEL design allows a complete recharging after an unwanted deep discharge

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and block voltages and temperatures

## 7. Operational data

classification according to EUROBAT	> 12 years, long life
operational life	18 years in stand-by operation, float
maintenance-free	no topping-up during life
IEC 60 896-2 cycles	> 1500
self-discharge	approx. 2% per month at 20°C
operational temperature	-20°C to 45°C recommended 10°C to 30°C
deep discharge recovery	very good
standard	DIN 40 744
test standard	IEC 60 896-21, -22
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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# BAE SECURA OGiV BLOCK

## Technical Specification for Stationary VRLA - Block - Batteries

### 1. Application

BAE OGiV - batteries are maintenance-free and classified as >12 years, long life, the highest class according to EUROBAT. Where operational safety has top priority and short bridging times of 15 min to several hours are required, BAE OGiV is the right choice.

They are used as reserve power in telecommunications, radio relay stations, switching stations of utilities, emergency light equipment and uninterrupted power supplies.



### 2. Types, capacities, dimensions, mass

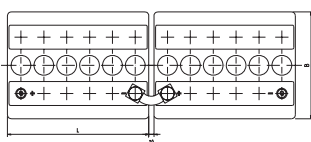
Type	C10 20 °C Ah	C5 20 °C Ah	C3 20 °C Ah	C1 20 °C Ah	C1/2 20 °C Ah	C1/6 20 °C Ah	C 8 25 °C Ah	Ri 1) mΩ	I <sub>SC</sub> 2) kA	length mm	width mm	height (max.) mm	mass kg
Ue V / cell	1,80	1,79	1,78	1,74	1,70	1,60	1,75						

12 V 1 OGiV 25	28	23	22,2	18,3	15,7	12,1	25,6	19,20	0,65	272	205	385	35
12 V 2 OGiV 50	51	46,5	44,4	36,6	31,5	24,1	50,4	9,60	1,29	272	205	385	44
12 V 3 OGiV 75	77	70	66,6	54,6	47,2	36,3	75,2	6,40	1,94	272	205	385	53
12 V 4 OGiV 100	101	93,5	89,1	73,2	63	48,3	100	4,80	2,59	272	205	385	62
12 V 5 OGiV 125	130	113	108	91	78	59,8	126	3,84	3,23	380	205	385	84
12 V 6 OGiV 150	157	136	130	108	93	71	150	3,20	3,88	380	205	385	93

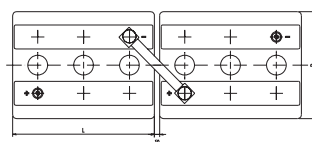
6 V 7 OGiV 175	178	153	150	125	107	82,2	175	1,37	4,53	272	205	385	53
6 V 8 OGiV 200	205	179	172	142	122	93,3	200	1,20	5,18	272	205	385	57
6 V 9 OGiV 225	229	203	191	161	135	103	226	1,07	5,82	380	205	385	73
6 V 10 OGiV 250	255	228	218	180	148	112	250	0,96	6,47	380	205	385	78
6 V 11 OGiV 275	281	255	241	198	161	121	275	0,87	7,12	380	205	385	81
6 V 12 OGiV 300	308	281	266	216	175	130	300	0,80	7,76	380	205	385	85

2 V 24 OGiV 600	615	536	517	427	366	280	600	0,13	15,54	205	272	385	57
2 V 30 OGiV 750	765	684	653	539	444	335	751	0,11	19,31	205	380	385	81
2 V 36 OGiV 900	924	843	799	648	525	390	900	0,09	23,28	205	380	385	85

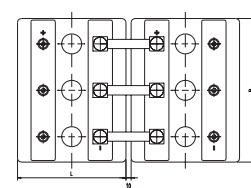
1, 2) internal resistance and short-circuit-current according to IEC 60 896-21, -22



12 V 1 OGiV 25 to 12 V 6 OGiV 150



6 V 7 OGiV 175 to 6 V 12 OGiV 300



2 V 24 OGiV 600 to 2 V 36 OGiV 900

# Technical Specification for BAE SECURA OGiV BLOCK

## 3. Design

positive electrode	round-grid plate with circular bars in a corrosion-resistant PbCaSn alloy
negative electrode	flat plate with long life expander and PbCaSn alloy
separation	microporous separator
electrolyte	sulphuric acid of 1,24 kg/l, fixed as GEL by fumed silica
container	grey coloured, high-impact SAN, UL-rating 94 HB
lid	grey coloured, high-impact SAN, UL-rating 94 HB (as option: container and lid made from ABS, UL rating UL 94VO)
blocks with blind cells	4 V, 6 V, 8 V, 10 V
pole bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
pole	with M10 brass inlay
valve	one valve per cell with flame arrestor, opening pressure approx. 100 mbar, closing pressure approx. 50 mbar
connector	insulated solid copper connector, cross section 90, 150 or 300 mm <sup>2</sup> or flexible insulated copper cable, cross section 35, 50, 70, 95 or 120 mm <sup>2</sup>
connector screw	M 10, steel, insulated
protection	IP 25 according to DIN 40050, touch-protected according to VBG 4
horizontal operation	Please use special type BAE OGiV „horizontal“. The construction and production of this type is adapted to the horizontal operation.

## 4. Charging

IU - characteristic	$I_{max}$ without limitation $U = 2,25$ V/cell $\pm 1\%$ , between 10°C and 45°C $\Delta U/\Delta T = -0,003$ V/K below 10°C in the monthly average
float current	20–30 mA/100 Ah
boost charge	$U = 2,35$ V/cell, time limited
charging time up to 92%	6 h with $1,5 \times I_{10}$ initial current, 2,23 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided the GEL design allows a complete recharging after an unwanted deep discharge
deep discharge recovery	

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and block voltages and temperatures

## 7. Operational data

classification according to EUROBAT	> 12 years, long life
operational life	15 years in standby operation, float
maintenance-free	no topping-up during life
IEC 60 896-2 cycles	> 800
self-discharge	approx. 2% per month at 20°C
operational temperature	-20°C to 45°C recommended 10°C to 30°C 45°C to 55°C only for short periods
deep discharge recovery	very good
dimensions according to test standards	DIN 40737, part 3
safety standard, ventilation	IEC 60 896-21, -22
transport	EN 50 272-2 Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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## Technical Specification for Stationary VRLA – Cells (DIN 40 742)

### 1. Application

BAE OPzV - Batteries belong to the best EUROBAT classification for maintenance-free lead - acid - batteries: > 12 years, long life. In applications with high requirements of operational safety and bridging times of 1h to more than 10 h the BAE OPzV is the right choice.

Fields:

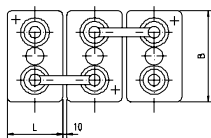
Telecommunications  
Emergency lighting  
Microwave radio systems  
Power generation plants



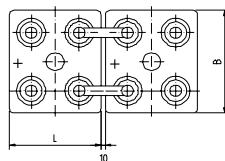
### 2. Types, capacities, dimensions, mass

Type	C10 20 °C Ah	C5 20 °C Ah	C3 20 °C Ah	C1 20 °C Ah	C8 25 °C Ah	Ri 1) mΩ	I <sub>sc</sub> 2) kA	length mm	width mm	height max mm	mass kg	lead mass kg
Ue V / Cell												
	1,80	1,77	1,75	1,67	1,75							
4 OPzV 200	231	205	193	133	234	1,20	1,70	105	208	420	19,5	13
5 OPzV 250	290	255	228	166	292	0,96	2,15	126	208	420	23,5	15
6 OPzV 300	350	310	273	199	350	0,80	2,57	147	208	420	28	19
5 OPzV 350	415	360	315	223	418	0,71	2,88	126	208	535	31	21
6 OPzV 420	500	435	378	268	501	0,60	3,46	147	208	535	36,5	24
7 OPzV 490	580	505	441	313	585	0,51	4,04	168	208	535	42	27
6 OPzV 600	708	615	546	383	715	0,45	4,58	147	208	710	50	34
8 OPzV 800	944	820	729	511	952	0,34	6,10	215	193	710	68	45
10 OPzV 1000	1180	1025	909	638	1192	0,27	7,63	215	235	710	82	55
12 OPzV 1200	1420	1230	1092	766	1432	0,23	9,15	215	277	710	97	65
12 OPzV 1500	1650	1395	1228	850	1664	0,24	8,58	215	277	855	120	80
16 OPzV 2000	2200	1860	1637	1134	2216	0,18	11,4	215	400	815	160	107
20 OPzV 2500	2750	2325	2046	1417	2776	0,14	14,3	215	490	815	195	133
24 OPzV 3000	3300	2790	2455	1701	3328	0,12	17,1	215	580	815	230	160

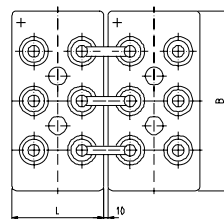
1,2) internal resistance and short - circuit - current from IEC 60896-21



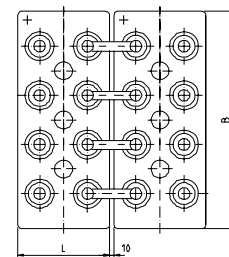
4 OPzV 200 to 6 OPzV 600



8 OPzV 800 to 12 OPzV 1500



16 OPzV 2000



20 OPzV 2500 to 24 OPzV 3000

# Technical Specification for BAE *SECURA OPzV*

## 3. Design

positive electrode	tubular - plate with a polyester gauntlet and solid grids in a corrosion-resistant PbCaSn - alloy
negative electrode	grid - plate in a PbCaSn alloy with long - life expander material
separation	microporous separator
electrolyte	sulphuric acid with a density of 1,24 kg/l, fixed as GEL by fumed silica
container	high impact, halogenfree SAN (Styrol-Acryl-Nitril), grey coloured, UL rating 94HB
lid	high impact, halogenfree SAN (Styrol-Acryl-Nitril), grey coloured, UL rating 94HB (alternatively container and lid in ABS, UL rating 94 VO)
valve	valve with flame arrestor opening pressure approx. 100 mbar, closing pressure approx. 50 mbar
pole - bushing	100% gas- and electrolyte-tight, sliding, injection-moulded Panzer pole
kind of pole	M10 brass insertion
connectors	insulated solid copper connectors with cross-section of 90, 150 or 300 mm <sup>2</sup> or flexible insulated copper cables with cross-section of 35, 50, 70, 95 or 120 mm <sup>2</sup>
kind of protection	IP 25 regarding DIN 40050, touch protected according VBG 4.
horizontal operation	Please use BAE special type OPzV „horizontal“. The construction and production of this type is adapted to the horizontal operation.

## 4. Charging

I <sub>U</sub> - characteristic	I <sub>max</sub> without limitation  U = 2,25 V/cell ±1%, between 10°C and 45°C ΔU/ΔT = -0,003 V/K below 10°C in the monthly average
float current	20–30 mA/100 Ah
boost charge	U = 2,35 to 2,40 V/cell, time limited
charging time up to 90%	6 h with 1,5 x I <sub>10</sub> initial current, 2.25 V/cell, 80% C3 discharged

## 5. Discharge characteristics

reference temperature	20°C
initial capacity	100%
depth of discharge (DOD)	normally up to 80%
deep discharges	more than 80% DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

## 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery and cell voltages and temperatures

## 7. Operational data

EUROBAT classification	> 12 years, long life
operational life	20 years in stand-by operation, float
maintenance-free	no topping-up water during operational life
IEC 60 896-2 cycles	> 1500
self-discharge	approx. 2% per month at 20°C
operational temperature	-20°C to 45°C recommended 10°C to 30°C short-time 45°C to 55°C
recovery after deep discharge	very good
standard	DIN 40 742 part 1
tests according	IEC 60896 - 21
safety standard, ventilation	EN 50 272-2
transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.



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# BAE 48V FRONT TERMINAL BATTERY

## Technical Specification

### 1. Application

BAE 48 V - FRONT TERMINAL - BATTERIES are used for the power supply of all kind of telecom, intranet and internet systems.

### 2. Features

**19" size:** 120 Ah to 600 Ah with a depth of 400 mm.

**23" size:** 330 Ah to 1100 Ah with a depth of 650 mm.

**Modular design:** 4 moduls of 12 V or 6 moduls of 8 V form a 48V-battery.

**Best EUROBAT class: long life, >12 years:** Tubular plates, high tin alloy, GEL-technique, low acid density.

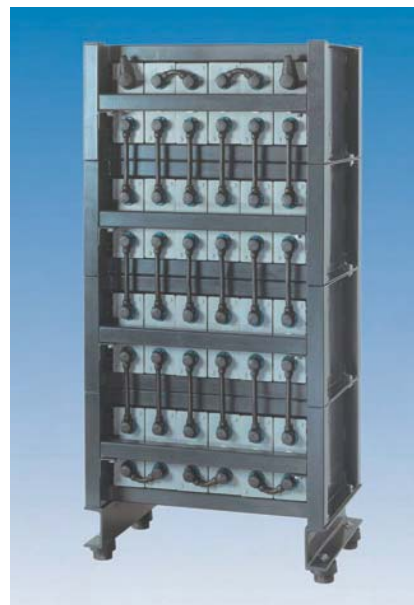
**Front terminal access to all poles.**

**100 % sealing at the poles and the jar/cover joint.**

**Rigid design with good ventilation by distance plates.**

**Easy transport with fork lift.**

**Earth-quake - proof.**



### 3. Dimensions, weights BAE 48V Front Terminal Battery

Type	Moduls	Cells/ modul	Length	Depth	Height	Weight/ modul	Weight/ battery	Footprint
	units	units	mm	mm	mm	kg	kg	m <sup>2</sup>
48V 2 SPzV 120	4	6	384	398	1224	66.7	271.8	0.153
48V 3 SPzV 180	4	6	492	398	1224	89.8	364.2	0.196
48V 4 SPzV 240	4	6	600	398	1224	115.4	466.6	0.239
48V 5 SPzV 300	4	6	708	398	1224	139.7	566.8	0.282
48V 6 SPzV 360	4	6	816	398	1224	163.5	662.0	0.325
48V 7 SPzV 420	6	4	640	398	1786	127.8	774.8	0.255
48V 8 SPzV 480	6	4	712	398	1786	145.3	881.8	0.283
48V 9 SPzV 540	6	4	784	398	1786	160.3	971.8	0.312
48V 10 SPzV 600	6	4	856	398	1786	176.9	1071	0.341
48V 3 SPzV 330	4	6	492	654	1224	171.0	689.0	0.335
48V 4 SPzV 440	4	6	600	654	1224	217.6	875.4	0.408
48V 5 SPzV 550	4	6	708	654	1224	262.9	1059	0.481
48V 6 SPzV 660	4	6	816	654	1224	305.9	1232	0.555
48V 7 SPzV 770	6	4	640	654	1786	236.4	1427	0.435
48V 8 SPzV 880	6	4	712	654	1786	262.3	1584	0.484
48V 9 SPzV 990	6	4	784	654	1786	298.5	1801	0.533
48V 10 SPzV 1100	6	4	856	654	1786	325.9	1966	0.582

# Technical Specification for the BAE 48V Front Terminal Battery

## 4. Electrical data BAE 48V Front Terminal Battery

Type	C10	C5	C3	C1	C1/2	R <sub>i</sub>	I <sub>k</sub>
Final voltage	43.2V	42.5V	42.0V	40.1V	38.4V	1.)	2.)
	Ah	Ah	Ah	Ah	Ah	mOhm	kA
48V 2 SPzV 120	120	110	98	76	61	40.8	1.21
48V 3 SPzV 180	180	165	147	114	91.5	27.2	1.82
48V 4 SPzV 240	240	220	196	152	122	20.4	2.42
48V 5 SPzV 300	300	275	245	190	152.5	16.3	3.03
48V 6 SPzV 360	360	330	294	228	183	13.6	3.64
48V 7 SPzV 420	420	385	343	266	213.5	11.7	4.24
48V 8 SPzV 480	480	440	392	304	244	10.2	4.85
48V 9 SPzV 540	540	495	441	342	274.5	9.1	5.45
48V 10 SPzV 600	600	550	490	380	305	8.2	6.06
48V 3 SPzV 330	330	300	274.5	201	156	22.4	2.16
48V 4 SPzV 440	440	400	366	268	208	16.8	2.88
48V 5 SPzV 550	550	500	457.5	335	260	13.4	3.6
48V 6 SPzV 660	660	600	549	402	312	11.2	4.32
48V 7 SPzV 770	770	700	640.5	469	364	9.6	5.04
48V 8 SPzV 880	880	800	732	536	416	8.4	5.76
48V 9 SPzV 990	990	900	823.5	603	468	7.5	6.48
48V 10 SPzV 1100	1100	1000	915	670	520	6.7	7.2

1, 2) internal resistance and short - circuit - current according to IEC 60 896-21

Reference temperature 25°C

## 6. Operational characteristics

Charging in stand-by	IU-characteristic: I <sub>max</sub> without limitation, U = 54.5 V ± 1 %, between 10°C and 45°C ΔU/ΔT = - 0.072 V/K below 10°C in the monthly average
Float current	20-30 mA/100 Ah
Operational life	15 years in stand-by operation, float
Cycles according to IEC 60 896-2	> 1000
Maintenance-free	no topping up water during life
Operational temperature	-20°C to 45°C, recommended 10°C to 30°C
Grounding	the moduls are screwed together in an electrically conducting way
Test standard	IEC 60 986-21
safety standard, ventilation	EN 50 272-2
Transport	Batteries are not subject to ADR (road transport), if the conditions of the special rule 598 (chapter 3.3) are observed.
Assembling instruction	Racks or trays are needed to prevent cells from bulging. Assembling in racks or trays immediately after unpacking!



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# BAE SECURA FRONT TERMINAL HC

## Technical Specification

### 1. Application

BAE SECURA FRONT TERMINAL HC - Batteries are developed for telecom power supply in cabinets. They are compatible with ETSI, 19" and 23" power rack configurations.

The high current (HC) capability allows also UPS-application for bridging times down to 10 min.

FV-0 plastic material and compliance with IEC 60 896-21, -22 assures an unrestricted application.

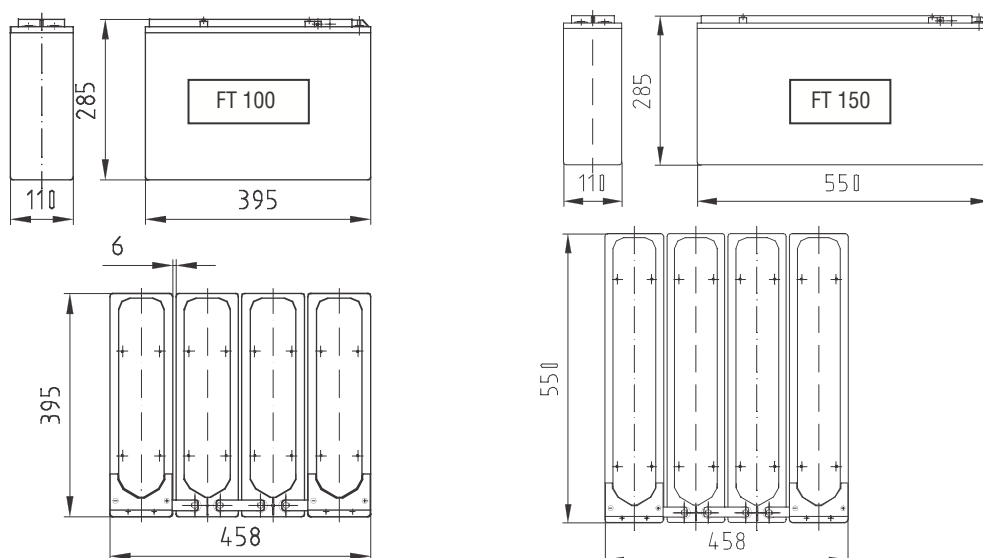


### 2. Types, capacities, dimensions, mass,

Type	C10	C5	C3	C1	C1/2	C1/6	$R_i$ 1)	$I_{sc}$ 1)	length	width	height max	mass
	Ah	Ah	Ah	Ah	Ah	Ah	m $\Omega$	kA	mm	mm	mm	kg
Uf V / cell	1,80	1,77	1,75	1,70	1,65	1,60						
Uf V / block	10,8	10,62	10,50	10,20	9,90	9,60						
12V FT 100 HC	100	90	84	68	56	40	6,0	2,1	395	110	285	34
12V FT 150 HC	140	123	115	92	76	52	4,9	2,6	550	110	285	47,1

Reference temperature 20°C.

1) Internal resistance and short-circuit-current according to IEC 60896-21



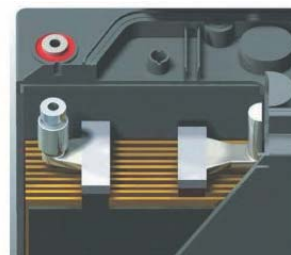
## Technical specification BAE *SECURA FRONT TERMINAL HC*

### 3. Design

positive electrode	flat- plate with corrosion-resistant PbCaSn1.0 alloy, active mass from 99,99% Pb
negative electrode	flat- plate with PbCaSn alloy with long life expander, active mass from 99,99% Pb
separation	microporous glass fibre mat in S - Wrapping, high repelling force,
electrolyte	sulphuric acid with a density of 1,30 kg/l, Absorbed in <b>Glass Mat</b>
container, lid	high - impact ABS, flame retardant FV-0 /LOI 28% dimensions fit to ETSI, 19" resp. 23", rope handles for transport
central gassing	evolving gasses may be conducted from the hose connections outside
terminal pole	bushing is 100% electrolyte – tight, Epoxy seal with labyrinth, brass inlay with M6 thread, torque setting 5-7 Nm, Cu-connectors 15*3 mm <sup>3</sup>
kind of protection	IP 25 regarding to DIN 40050, touch-protected according VBG 4.
intercell connection	lead connections are welded and epoxy sealed in a lid groove, no squeeze-welding
valves	EPDM-lip valve with opening pressure 10,5 to 14 kPa, closing pressure 5 kPa, with flame arrestor

### 4. Charging

IU - characteristic	I <sub>max</sub> without limitation
float charge	
10 to 45°C	U = 2,27 – 2,30 V/cell
below 10°C, in month's average	Voltage adjustment with -0,003 V/K
float current	20-50 mA/100 Ah
boost charge	U = 2,40 V/cell, time limited
charging time up to 95%	5h with 1,5 x I <sub>10</sub> initial current, 2.27 V/cell, 80% C3 discharged



### 5. Discharge characteristics

reference temperature	20°C
Projecting	Use of our projecting data or projecting program
depth of discharge (DOD)	normally only up to 80%
deep discharges	discharges beyond final discharge voltages have to be avoided.

### 6. Maintenance

every 6 months	check battery voltage, pilot block voltage, temperature
every 12 months	record battery, block voltages and temperatures

### 7. Operational data

operational life	10-12 years at 20°C, in stand-by operation, float
IEC 60 896-2 cycles	> 200
self-discharge	app. 2% per month at 20°C
operational temperature	-20°C to 45°C , recommended 10°C to 30°C
waste heat during float	FT 100 HC 0,55 W, FT 150 HC 0,8 W
safety standard	EN 50272-2
ventilation requirement	air flow per block: FT 100 HC 0,03 m <sup>3</sup> /h, FT 150 HC 0,045 m <sup>3</sup> /h
during standby	inlet and outlet opening per block: FT 100 HC 0,84 cm <sup>2</sup> , FT 150 HC 1,26 cm <sup>2</sup>
transport	Batteries are not subject to ADR (road transport), if the conditions of special rule 598 (chptr. 3.3) are observed.



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