

Industrial Batteries / Network Power

**Sonnenschein A400**



»Outstanding price/quality ratio  
for long-term energy storage«



# Industrial Batteries

## The powerful range of Network Power

Energy storage solutions for critical systems that require uninterrupted power supply. GNB® Industrial Power offers powerful batteries for your individual needs. The below table is only indicative and depends on customers' specific applications. For more information please ask a GNB sales representative.

Applications	Battery ranges																	
	Sonnenschein						Marathon		Sprinter		Absolyte	Powerfit	Classic					
	A400/A600	A400 FT	A500	A700	Solar	RAIL	M FT	M/L/XL	S	P/XP	GP/GX	S200/S300	GRoE	OCSM	OPzS	Energy Bloc/OGi	Solar	rail
Telecom	●	●	●	●			●	●	●	●	●			●	●	●		
UPS		●	●	●			●	●	●	●	●			●		●		
Emergency lighting	●		●					●		●		●			●	●		
Security	●		●	●						●		●		●	●			
Utility	●	●		●			●	●	●	●	●		●	●	●	●		
Railways	●	●	●	●		●	●	●	●	●	●			●		●		●
Photovoltaic					●						●							●
Universal	●	●	●	●			●	●	●	●	●	●		●	●	●		

### The GNB Network Power brand overview



- > VRLA batteries (Valve Regulated Lead Acid) in which the electrolyte is fixed in an absorbent glass mat (AGM)
- > Excellent high current capability
- > Very economical
- > Maintenance-free (no topping up)



- > VRLA batteries (Valve Regulated Lead Acid) in which the electrolyte is fixed in a gel (dryfit technology)
- > Inventor of Gel technology
- > Highest reliability, even in non-optimal conditions
- > Particularly suitable for cyclic applications
- > Maintenance-free (no topping up)



- > Conventional lead-acid batteries with liquid electrolyte
- > Extreme reliability, proven over decades
- > Low maintenance



Further information about service is available on page 11

## Sonnenschein A400

### Unmatched, high reliability dryfit Gel technology

The Sonnenschein A400 range is a reference for energy storage, with proven reliability in many installations worldwide. The success of A400 batteries comes from the superior dryfit technology, available in a wide range of models to provide a solution for every power need.

#### Your benefits:

- > **dryfit Gel** – VRLA technology
- > **Lowest energy consumption** – saving costs
- > **Robust design** – resilient in harsh conditions
- > **Proof against deep discharge** – greater long-term energy delivery
- > **Completely recyclable** – low CO<sub>2</sub> footprint



#### Specifications:

- > Nominal capacity 5.50 - 180 Ah C<sub>10</sub>
- > Exceptional energy storage capacity combined with long life
- > Thick grid plates with high quality lead calcium alloy, for enhanced corrosion resistance and stability
- > Very low gassing due to the internal gas recombination
- > Design life: “12 years and longer – Long Life” according to EUROBAT classification
- > Shelf life up to 2 years at 20°C without recharge due to the very low self discharge rate
- > Designed in accordance with IEC 60896-21/-22
- > Trouble-free transport of operational blocks, no restrictions for rail, road, sea and air transportation (IATA, DGR, clause A67)
- > Approval: UL (Underwriter Laboratories)
- > Manufactured in Europe in our ISO 9001 certified production plants



Design life  
12 years and  
longer -  
Long Life



Nominal  
capacity  
5.50 - 180 Ah



Block battery



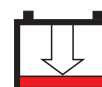
Grid plate



Recyclable



Valve regulated  
lead-acid  
batteries



Proof  
against deep  
discharge



Maintenance  
free (no  
topping up)

# Sonnenschein A400

## Technical data

### Technical characteristics and data

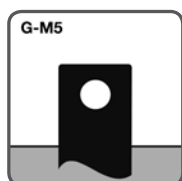
Type	Part number	Nom. voltage V	Nominal capacity C <sub>10</sub> 1.80 Vpc 20°C Ah	Max. load approx. A	Length (l) max. mm	Width (b/w) max. mm	Height up to top of cover (h1) max. mm	Height over terminals (h2) max. mm	Weight approx. kg	Internal resistance mOhm	Short circuit current A	Terminal
A406/165 A	NGA4060165HSOCA	6	165	770	246	192	254	275	28.0	2.10	2800	A-Terminal
A406/165 F10	NGA4060165HSOFA	6	165	770	246	192	254	282	28.5	2.10	2800	F-M10
A412/5.5 SR	NGA41205D5HSORA	12	5.50	80.0	152	65.5	94.5	98.4	2.50	138	93.0	SR-6.3
A412/8.5 SR	NGA41208D5HSORA	12	8.50	80.0	152	98.0	94.5	98.4	3.60	86.0	150	SR-6.3
A412/12 SR	NGA4120012HSORA	12	12.0	100	181	76	152	157	5.60	47.0	260	SR-6.3
A412/20 G5	NGA4120020HSOBA	12	20.0	200	167	176	126	126	9.00	25.0	460	G-M5
A412/32 G6	NGA4120032HSOBA	12	32.0	400	210	175	175	175	13.6	15.0	784	G-M6
A412/32 F10	NGA4120032HSOFA	12	32.0	400	210	175	175	181	14.1	15.0	784	F-M10
A412/50 A	NGA4120050HSOCA	12	50.0	440	278	175	190	190	18.5	10.0	1220	A-Terminal
A412/50 F10	NGA4120050HSOFA	12	50.0	440	278	175	190	196	19.0	10.0	1220	F-M10
A412/50 G6	NGA4120050HSOBA	12	50.0	440	278	175	190	190	18.5	10.0	1220	G-M6
A412/65 F10	NGA4120065HSOFA	12	65.0	440	353	175	190	196	23.5	9.00	1414	F-M10
A412/65 G6	NGA4120065HSOBA	12	65.0	440	353	175	190	190	23.0	9.00	1414	G-M6
A412/85 F10	NGA4120085HSOFB	12	85.0	770	244	204	250	276	32.0	8.00	1472	F-M10
A412/90 A	NGA4120090HSOCA	12	90.0	770	284	267	208	230	33.0	7.00	1733	A-Terminal
A412/90 F10	NGA4120090HSOFA	12	90.0	770	284	267	208	237	33.5	7.00	1733	F-M10
A412/100 A	NGA4120100HSOCA	12	100	770	513	189	195	223	36.5	6.90	1777	A-Terminal
A412/100 F10	NGA4120100HSOFA	12	100	770	513	189	195	223	37.0	6.90	1777	F-M10
A412/120 A	NGA4120120HSOCA	12	120	770	513	223	195	223	45.0	5.70	2118	A-Terminal
A412/120 F10	NGA4120120HSOFA	12	120	770	513	223	195	223	45.5	5.70	2118	F-M10
A412/180 A	NGA4120180HSOCA	12	180	770	518	274	216	238	64.0	3.80	3227	A-Terminal
A412/180 F10	NGA4120180HSOFA	12	180	770	518	274	216	244	64.5	3.80	3227	F-M10

Max load with suitable matching contacts. · A412/85 F10 with central degassing. · h2 for F10 terminals plus max. 24 mm for connector/screw.

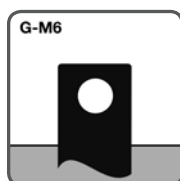
### Container, approval, terminal and torque

> **Container:** - 5.5 - 12 Ah = ABS  
- 20 - 180 Ah = Polypropylene (PP)

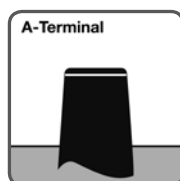
> **Approval:** - Underwriters Laboratories (UL), USA  
- DIN/Gost/TÜV, Russia



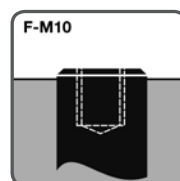
5 Nm



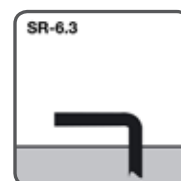
6 Nm



8 Nm



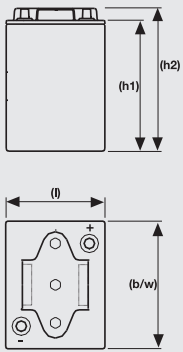
17 Nm



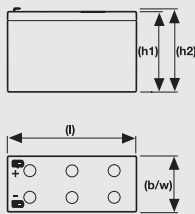
# Sonnenschein A400

## Drawings

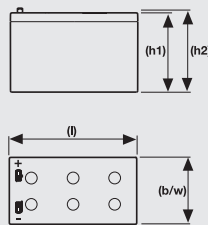
**A406/165 A  
(A406/165 F10)\***



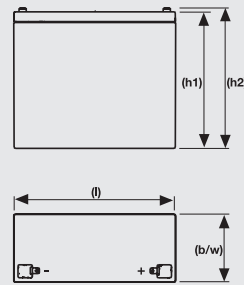
**A412/5.5 SR**



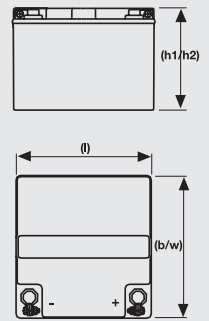
**A412/8.5 SR**



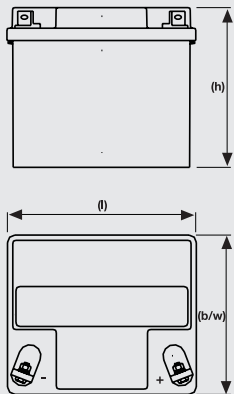
**A412/12 SR**



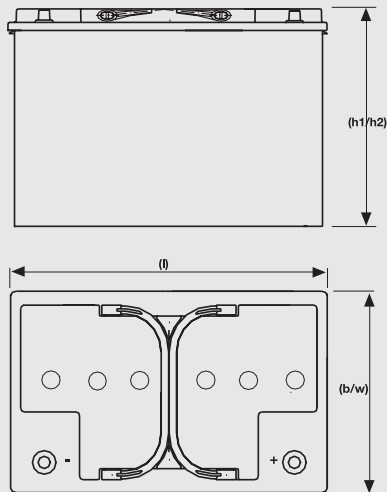
**A412/20 G5**



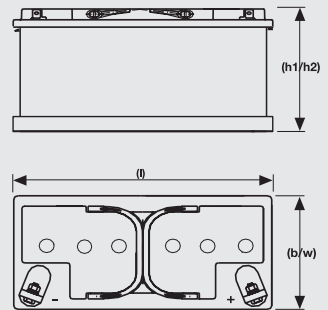
**A412/32 F10  
(A412/32 G6)\***



**A412/50 A  
(A412/50 G6,  
A412/50 F10)\***



**A412/65 F10  
(A412/65 G6)\***



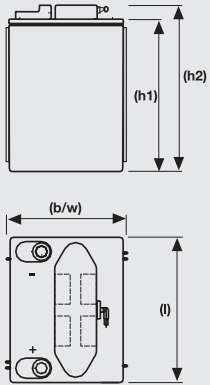
Not to scale!

\* Dimensions are also valid for other terminals.

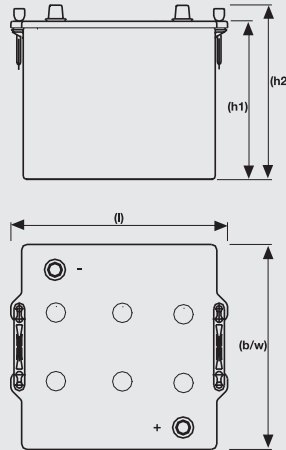
# Sonnenschein A400

## Drawings

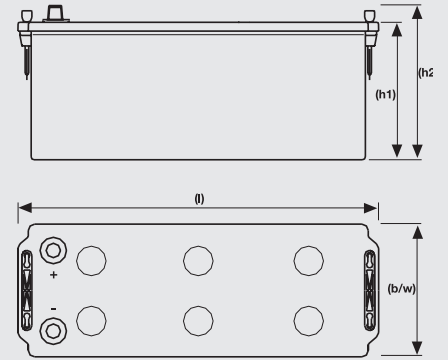
**A412/85 F10**



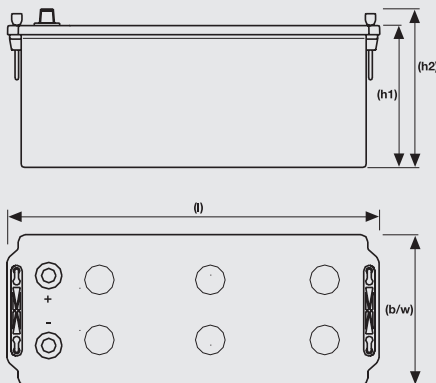
**A412/90 A  
(A412/90 F10)\***



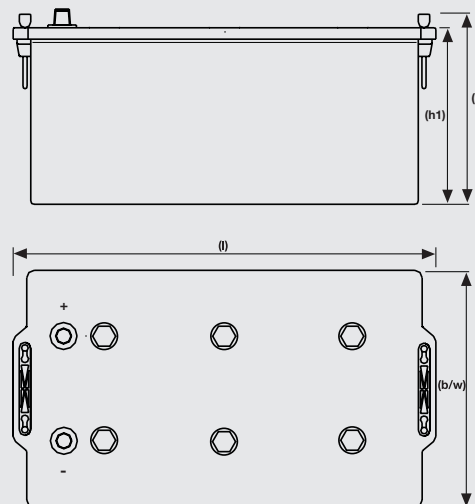
**A412/100 A  
(A412/100 F10)\***



**A412/120 A  
(A412/120 F10)\***



**A412/180 A  
(A412/180 F10)\***



Not to scale!

\* Dimensions are also valid for other terminals.

## Sonnenschein A400

### Constant current discharge

#### 1.85 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	196	163	143	131	115	98.0	82.0	53.0	41.0	32.4	27.0	18.1	15.9
A412/5.5SR	NGA41205D5HSORA	9.94	8.34	6.97	5.96	4.85	3.76	3.00	2.00	1.44	1.14	0.96	0.64	0.53
A412/8.5SR	NGA41208D5HSORA	15.0	12.0	10.0	8.00	6.90	5.30	4.30	2.83	2.07	1.66	1.39	0.96	0.82
A412/12SR	NGA4120012HSORA	18.0	15.0	12.0	11.0	9.00	7.00	5.50	3.34	2.50	2.04	1.74	1.24	1.12
A412/20G5	NGA4120020HSOBA	33.0	25.0	22.0	20.0	17.0	14.0	11.0	6.00	4.71	3.76	3.16	2.13	1.85
A412/32G6	NGA4120032HSOBA	53.0	43.0	36.0	32.0	28.0	21.0	17.0	11.0	8.11	6.45	5.44	3.68	3.03
A412/50A	NGA4120050HSOCA	81.0	68.0	57.0	51.0	42.0	34.0	28.0	18.0	12.8	10.1	8.51	5.71	4.80
A412/65G6	NGA4120065HSOBA	102	77.0	63.0	56.0	48.0	42.0	36.0	22.0	15.9	12.8	10.8	7.31	6.20
A412/85F10	NGA4120085HSOFB	121	103	89.0	80.0	71.0	55.0	45.0	29.0	21.3	16.9	14.1	9.60	8.20
A412/90A	NGA4120090HSOCA	136	117	100	89.0	71.0	55.0	46.0	30.0	22.8	17.6	14.8	10.4	8.90
A412/100A	NGA4120100HSOCA	144	124	105	93.0	72.0	56.0	46.0	31.0	23.5	17.9	15.2	10.7	9.60
A412/120A	NGA4120120HSOCA	175	138	120	108	95.0	78.0	61.0	37.0	27.5	22.2	18.9	12.9	11.3
A412/180A	NGA4120180HSOCA	240	193	170	155	130	103	84.0	59.0	42.6	34.0	28.6	19.1	16.5

#### 1.80 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	243	211	180	158	132	109	88.0	56.0	43.0	33.9	28.2	18.8	16.5
A412/5.5SR	NGA41205D5HSORA	11.2	9.30	7.77	6.54	5.12	4.03	3.18	2.09	1.50	1.19	0.99	0.67	0.50
A412/8.5SR	NGA41208D5HSORA	17.0	14.0	11.0	9.00	7.38	5.65	4.51	2.93	2.13	1.70	1.43	0.99	0.80
A412/12SR	NGA4120012HSORA	21.0	18.0	14.0	12.0	10.0	8.00	6.20	3.72	2.75	2.22	1.88	1.32	1.20
A412/20G5	NGA4120020HSOBA	36.0	27.0	23.0	21.0	18.0	15.0	12.0	7.00	4.89	3.88	3.25	2.19	2.00
A412/32G6	NGA4120032HSOBA	63.0	51.0	42.0	36.0	30.0	23.0	19.0	12.0	8.60	6.80	5.70	3.90	3.20
A412/50A	NGA4120050HSOCA	97.9	81.0	66.0	57.0	46.0	37.0	29.0	19.0	13.3	10.5	8.78	5.89	5.00
A412/65G6	NGA4120065HSOBA	120	95.0	76.0	64.0	52.0	45.0	39.0	23.0	16.7	13.3	11.2	7.58	6.50
A412/85F10	NGA4120085HSOFB	147	125	105	91.0	75.0	60.0	49.0	31.0	22.3	17.5	14.6	9.95	8.50
A412/90A	NGA4120090HSOCA	165	142	117	100	79.0	61.0	50.0	32.0	23.4	18.3	15.4	10.8	9.00
A412/100A	NGA4120100HSOCA	176	150	125	104	81.0	62.0	50.0	32.0	24.1	18.7	15.8	11.2	10.0
A412/120A	NGA4120120HSOCA	201	155	133	119	102	85.0	67.0	39.0	28.7	23.0	19.4	13.1	12.0
A412/180A	NGA4120180HSOCA	290	235	194	171	144	112	90.0	62.0	44.6	35.5	29.7	19.8	18.0

#### 1.75 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	290	246	210	180	143	115	92.0	58.0	43.7	34.4	28.5	19.1	16.6
A412/5.5SR	NGA41205D5HSORA	12.9	9.78	8.22	6.92	5.34	4.17	3.29	2.15	1.54	1.22	1.01	0.68	0.50
A412/8.5SR	NGA41208D5HSORA	19.0	15.0	12.0	10.0	7.54	5.82	4.62	2.98	2.16	1.73	1.45	1.00	0.80
A412/12SR	NGA4120012HSORA	24.0	20.0	16.0	13.0	10.0	8.00	6.62	3.92	2.87	2.31	1.95	1.36	1.20
A412/20G5	NGA4120020HSOBA	45.0	34.0	27.0	23.0	18.0	15.0	12.0	7.00	5.00	3.90	3.30	2.20	2.00
A412/32G6	NGA4120032HSOBA	73.0	57.0	46.0	39.0	31.0	24.0	19.0	12.0	8.78	6.94	5.78	3.93	3.23
A412/50A	NGA4120050HSOCA	109	90.0	73.0	61.0	48.0	38.0	30.0	19.0	13.5	10.6	8.88	5.95	5.00
A412/65G6	NGA4120065HSOBA	134	107	84.0	70.0	56.0	48.0	41.0	24.0	17.0	13.6	11.4	7.67	6.50
A412/85F10	NGA4120085HSOFB	170	140	118	100	79.0	63.0	51.0	32.0	22.7	17.9	14.9	10.0	8.50
A412/90A	NGA4120090HSOCA	186	154	128	108	84.0	64.0	52.0	33.0	24.0	18.7	15.7	10.9	9.00
A412/100A	NGA4120100HSOCA	194	160	134	112	86.0	65.0	52.0	33.0	24.8	19.2	16.2	11.4	10.0
A412/120A	NGA4120120HSOCA	233	174	145	127	106	88.0	69.0	40.0	29.1	23.2	19.5	13.2	12.0
A412/180A	NGA4120180HSOCA	328	266	216	185	152	117	94.0	63.0	45.5	36.1	30.1	20.1	18.0

Discharge data are also valid for other terminals.

## Sonnenschein A400

### Constant current discharge

#### 1.70 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	332	273	233	198	152	119	93.9	58.0	43.9	34.6	28.7	19.1	16.6
A412/5.5SR	NGA41205D5HSORA	14.2	10.2	8.58	7.17	5.48	4.26	3.35	2.18	1.56	1.23	1.02	0.70	0.50
A412/8.5SR	NGA41208D5HSORA	21.0	15.0	12.0	10.0	7.63	5.92	4.68	3.00	2.18	1.74	1.46	1.00	0.80
A412/12SR	NGA4120012HSORA	28.0	21.0	16.0	13.0	10.0	8.00	6.77	3.99	2.91	2.33	1.96	1.40	1.20
A412/20G5	NGA4120020HSOBA	51.0	37.9	29.0	24.0	19.0	15.0	12.0	7.00	5.00	3.96	3.30	2.20	2.00
A412/32G6	NGA4120032HSOBA	84.0	61.0	50.0	42.0	32.0	25.0	20.0	12.0	8.90	7.00	5.80	3.90	3.20
A412/50A	NGA4120050HSOCA	122	94.0	77.0	64.0	49.0	39.0	31.0	18.9	13.5	10.7	8.92	6.00	5.00
A412/65G6	NGA4120065HSOBA	148	111	89.0	73.0	57.0	49.0	41.0	24.0	17.2	13.7	11.4	7.70	6.50
A412/85F10	NGA4120085HSOFB	192	151	127	106	82.0	64.0	52.0	32.0	22.8	17.9	14.8	10.0	8.50
A412/90A	NGA4120090HSOCA	206	164	137	113	87.0	66.0	53.0	33.0	24.3	18.9	16.2	11.0	9.00
A412/100A	NGA4120100HSOCA	213	171	141	117	89.0	67.0	53.0	34.0	25.1	19.3	17.0	11.4	10.0
A412/120A	NGA4120120HSOCA	280	200	160	136	109	90.0	70.0	40.0	29.3	23.3	19.5	13.2	12.0
A412/180A	NGA4120180HSOCA	366	287	234	199	156	120	95.0	64.0	45.9	36.3	30.3	20.2	18.0

#### 1.65 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	389	301	248	210	157	121	95.0	59.0	43.9	34.6	28.7	19.1	16.6
A412/5.5SR	NGA41205D5HSORA	15.5	10.6	8.71	7.33	5.57	4.34	3.40	2.19	1.56	1.23	1.00	0.70	0.50
A412/8.5SR	NGA41208D5HSORA	23.0	16.0	12.0	10.0	7.70	5.98	4.73	3.01	2.19	1.74	1.50	1.00	0.80
A412/12SR	NGA4120012HSORA	30.0	22.0	17.0	14.0	11.0	9.00	6.80	4.00	2.92	2.34	2.00	1.40	1.20
A412/20G5	NGA4120020HSOBA	56.0	40.0	31.0	25.0	19.0	15.0	12.0	7.00	5.01	3.97	3.30	2.20	2.00
A412/32G6	NGA4120032HSOBA	94.0	65.0	52.0	43.0	33.0	25.0	20.0	12.0	8.90	7.01	5.80	3.90	3.20
A412/50A	NGA4120050HSOCA	133	98.0	79.0	66.0	50.0	39.0	31.0	19.0	13.6	10.7	8.90	6.00	5.00
A412/65G6	NGA4120065HSOBA	161	114	91.0	75.0	57.0	49.0	42.0	24.0	17.3	13.7	11.5	7.70	6.50
A412/85F10	NGA4120085HSOFB	210	159	134	110	84.0	65.0	52.0	32.0	22.8	17.9	14.9	10.0	8.50
A412/90A	NGA4120090HSOCA	225	172	142	116	88.0	67.0	53.0	33.0	24.4	18.9	16.3	11.0	9.00
A412/100A	NGA4120100HSOCA	232	178	146	120	90.0	68.0	54.0	34.0	25.3	19.5	17.0	11.4	10.0
A412/120A	NGA4120120HSOCA	311	217	169	142	111	91.0	71.0	41.0	29.4	23.4	19.6	13.2	12.0
A412/180A	NGA4120180HSOCA	399	305	250	212	159	122	96.0	63.9	46.0	36.4	30.4	20.2	18.0

#### 1.60 Vpc – Discharge in A at 20 °C

Type	Part number	5 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h	4 h	5 h	8 h	10 h
A406/165A	NGA4060165HSOCA	422	318	256	215	160	122	96.0	59.0	44.0	34.6	28.7	19.1	16.6
A412/5.5SR	NGA41205D5HSORA	16.1	10.9	8.88	7.45	5.64	4.37	3.42	2.19	1.56	1.23	1.00	0.70	0.50
A412/8.5SR	NGA41208D5HSORA	24.0	16.0	13.0	10.0	7.79	6.03	4.76	3.02	2.19	1.74	1.50	1.00	0.80
A412/12SR	NGA4120012HSORA	33.0	23.0	17.0	14.0	11.0	9.00	6.82	4.01	2.92	2.34	2.00	1.40	1.20
A412/20G5	NGA4120020HSOBA	60.0	42.0	31.0	26.0	19.0	15.0	12.0	7.00	5.02	3.97	3.30	2.20	2.00
A412/32G6	NGA4120032HSOBA	101	68.0	54.0	44.0	33.0	25.0	20.0	12.0	8.91	7.01	5.80	3.90	3.20
A412/50A	NGA4120050HSOCA	144	101	81.0	67.0	51.0	40.0	31.0	19.0	13.6	10.7	8.90	6.00	5.00
A412/65G6	NGA4120065HSOBA	170	116	92.0	76.0	58.0	49.0	42.0	23.9	17.3	13.7	11.5	7.70	6.50
A412/85F10	NGA4120085HSOFB	229	166	137	113	85.0	66.0	52.0	32.0	22.8	17.9	14.9	10.0	8.50
A412/90A	NGA4120090HSOCA	245	177	145	118	89.0	68.0	54.0	34.0	24.5	19.0	16.3	11.0	9.00
A412/100A	NGA4120100HSOCA	253	183	149	121	91.0	69.0	54.0	34.0	25.4	19.5	17.0	11.4	10.0
A412/120A	NGA4120120HSOCA	333	228	175	146	112	91.0	71.0	41.0	29.4	23.4	19.6	13.2	12.0
A412/180A	NGA4120180HSOCA	439	322	258	217	162	123	96.0	64.0	46.0	36.4	30.4	20.2	18.0

Discharge data are also valid for other terminals.



## Sonnenschein A400

### Constant power discharge

#### 1.85 V<sub>pc</sub> – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	1310	1262	1171	1096	1005	875	797	689	543	458	293	222
A412/5.5SR	NGA41205D5HSORA	153	140	120	106	95.0	79.5	68.7	58.4	44.3	36.4	22.0	16.0
A412/8.5SR	NGA41208D5HSORA	216	200	176	159	141	117	101	84.4	64.8	53.7	31.0	22.0
A412/12SR	NGA4120012HSORA	251	239	219	203	184	156	140	114	89.4	74.8	38.0	29.0
A412/20G5	NGA4120020HSOBA	437	414	378	348	302	257	229	195	151	125	71.0	51.0
A412/32G6	NGA4120032HSOBA	679	633	580	532	483	413	366	303	233	194	128	92.0
A412/50A	NGA4120050HSOCA	1149	1074	1002	949	876	785	699	590	458	375	193	139
A412/65G6	NGA4120065HSOBA	1440	1341	1221	1137	1025	867	759	635	481	395	239	175
A412/85F10	NGA4120085HSOFB	1311	1275	1230	1158	1071	952	865	761	591	494	324	233
A412/90A	NGA4120090HSOCA	1685	1619	1493	1374	1243	1080	987	827	646	542	332	246
A412/100A	NGA4120100HSOCA	1873	1792	1625	1482	1329	1144	1047	860	674	567	335	252
A412/120A	NGA4120120HSOCA	2417	2253	1963	1773	1574	1384	1272	1109	914	745	410	300
A412/180A	NGA4120180HSOCA	3474	3323	3112	2959	2679	2284	2010	1562	1214	1015	632	467

#### 1.80 V<sub>pc</sub> – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	1622	1548	1414	1315	1184	1020	900	768	595	494	318	241
A412/5.5SR	NGA41205D5HSORA	174	160	140	122	106	87.6	74.4	62.1	47.1	38.4	24.0	17.0
A412/8.5SR	NGA41208D5HSORA	246	232	203	180	156	129	110	90.4	68.5	56.3	33.0	24.0
A412/12SR	NGA4120012HSORA	314	291	258	235	208	177	153	125	95.8	79.2	42.0	31.0
A412/20G5	NGA4120020HSOBA	565	520	467	421	358	291	251	208	159	131	77.0	55.0
A412/32G6	NGA4120032HSOBA	826	764	677	621	562	467	403	332	252	207	135	98.0
A412/50A	NGA4120050HSOCA	1385	1269	1134	1040	969	862	769	625	492	400	210	151
A412/65G6	NGA4120065HSOBA	1701	1601	1429	1295	1158	976	834	690	516	420	260	190
A412/85F10	NGA4120085HSOFB	1667	1572	1463	1375	1276	1082	960	803	637	526	352	253
A412/90A	NGA4120090HSOCA	1939	1848	1706	1554	1394	1184	1061	890	691	573	360	267
A412/100A	NGA4120100HSOCA	2076	1986	1828	1644	1454	1235	1112	934	719	597	364	274
A412/120A	NGA4120120HSOCA	2958	2667	2286	2026	1769	1496	1346	1146	971	802	446	326
A412/180A	NGA4120180HSOCA	4109	3898	3559	3336	3012	2594	2241	1756	1339	1104	687	507

#### 1.75 V<sub>pc</sub> – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	1850	1780	1628	1493	1356	1146	980	796	622	512	337	247
A412/5.5SR	NGA41205D5HSORA	196	178	155	134	114	93.1	78.3	63.4	48.8	39.6	24.0	17.0
A412/8.5SR	NGA41208D5HSORA	278	258	226	198	171	138	116	93.6	70.5	57.6	34.0	25.0
A412/12SR	NGA4120012HSORA	354	331	295	262	233	192	163	131	99.3	81.0	45.0	33.0
A412/20G5	NGA4120020HSOBA	658	595	518	467	397	315	267	213	164	134	77.0	56.0
A412/32G6	NGA4120032HSOBA	959	881	776	691	612	508	431	350	262	214	139	99.0
A412/50A	NGA4120050HSOCA	1591	1480	1293	1148	1032	923	819	653	510	413	215	152
A412/65G6	NGA4120065HSOBA	1968	1830	1620	1447	1267	1054	886	714	533	431	270	193
A412/85F10	NGA4120085HSOFB	1908	1826	1674	1532	1421	1200	1033	838	664	544	360	256
A412/90A	NGA4120090HSOCA	2301	2184	1984	1796	1564	1298	1128	927	716	590	375	272
A412/100A	NGA4120100HSOCA	2498	2364	2139	1928	1635	1348	1175	972	742	612	383	280
A412/120A	NGA4120120HSOCA	3453	3084	2593	2262	1940	1609	1387	1176	997	829	460	329
A412/180A	NGA4120180HSOCA	4555	4307	3950	3659	3316	2821	2399	1876	1413	1156	695	515

Discharge data are also valid for other terminals.

## Sonnenschein A400

### Constant power discharge

#### 1.70 Vpc – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	1993	1913	1778	1636	1455	1230	1036	814	637	521	339	247
A412/5.5SR	NGA41205D5HSORA	219	193	162	143	119	96.6	80.7	64.2	49.8	40.3	24.0	18.0
A412/8.5SR	NGA41208D5HSORA	306	282	246	212	177	143	119	95.2	71.5	58.3	34.0	25.0
A412/12SR	NGA4120012HSORA	394	365	323	285	247	202	170	134	101	82.4	45.0	33.0
A412/20G5	NGA4120020HSOBA	741	657	555	494	423	330	277	216	166	135	78.0	56.0
A412/32G6	NGA4120032HSOBA	1064	990	861	751	638	536	450	358	269	218	139	100
A412/50A	NGA4120050HSOCA	1734	1584	1406	1234	1079	956	848	668	519	419	216	153
A412/65G6	NGA4120065HSOBA	2191	2008	1762	1570	1322	1099	916	722	541	436	270	194
A412/85F10	NGA4120085HSOFB	2076	1987	1837	1671	1510	1275	1084	862	678	554	362	256
A412/90A	NGA4120090HSOCA	2553	2398	2176	1950	1669	1367	1171	945	727	597	375	273
A412/100A	NGA4120100HSOCA	2792	2604	2346	2090	1749	1413	1215	986	751	619	385	282
A412/120A	NGA4120120HSOCA	3821	3501	2938	2497	2089	1699	1441	1195	1008	840	460	330
A412/180A	NGA4120180HSOCA	4990	4742	4298	3929	3477	2975	2502	1944	1455	1184	697	517

#### 1.65 Vpc – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	2162	2055	1879	1734	1526	1278	1067	827	642	525	341	248
A412/5.5SR	NGA41205D5HSORA	235	208	169	149	122	98.8	82.3	64.7	50.5	40.7	24.0	18.0
A412/8.5SR	NGA41208D5HSORA	331	305	258	222	183	146	121	96.1	72.0	58.7	34.0	25.0
A412/12SR	NGA4120012HSORA	436	399	348	304	255	209	174	135	101	82.9	45.0	33.0
A412/20G5	NGA4120020HSOBA	799	700	583	511	438	338	282	218	167	136	79.0	56.0
A412/32G6	NGA4120032HSOBA	1161	1068	916	801	666	554	461	361	272	221	139	100
A412/50A	NGA4120050HSOCA	1931	1747	1480	1308	1120	991	865	677	523	421	217	153
A412/65G6	NGA4120065HSOBA	2419	2213	1874	1657	1371	1124	932	726	544	439	271	195
A412/85F10	NGA4120085HSOFB	2255	2139	1963	1770	1569	1325	1116	876	685	559	364	257
A412/90A	NGA4120090HSOCA	2823	2597	2304	2067	1743	1414	1200	954	732	601	376	274
A412/100A	NGA4120100HSOCA	3108	2827	2475	2216	1831	1459	1241	993	755	622	387	283
A412/120A	NGA4120120HSOCA	4111	3798	3170	2682	2193	1756	1474	1205	1012	844	460	331
A412/180A	NGA4120180HSOCA	5419	5099	4628	4162	3588	3073	2565	1978	1475	1198	700	518

#### 1.60 Vpc – Discharge in W/block at 20 °C

Type	Part number	2 min	3 min	5 min	7 min	10 min	15 min	20 min	30 min	45 min	1 h	2 h	3 h
A406/165A	NGA4060165HSOCA	2351	2202	1987	1828	1588	1307	1085	835	646	527	342	249
A412/5.5SR	NGA41205D5HSORA	248	220	175	153	125	100	83.3	65.0	51.0	41.1	24.0	18.0
A412/8.5SR	NGA41208D5HSORA	354	324	267	228	186	147	122	96.7	72.3	58.9	34.0	25.0
A412/12SR	NGA4120012HSORA	474	423	358	317	262	212	176	136	102	83.1	45.0	33.0
A412/20G5	NGA4120020HSOBA	874	760	610	521	446	343	285	219	167	136	80.0	56.0
A412/32G6	NGA4120032HSOBA	1245	1143	952	835	687	565	469	366	276	223	140	101
A412/50A	NGA4120050HSOCA	2216	1989	1583	1362	1151	1000	875	681	526	423	218	154
A412/65G6	NGA4120065HSOBA	2603	2401	1961	1712	1399	1137	939	728	546	440	272	196
A412/85F10	NGA4120085HSOFB	2431	2280	2058	1867	1608	1357	1136	884	689	561	365	257
A412/90A	NGA4120090HSOCA	3046	2754	2397	2156	1792	1444	1217	960	735	603	377	275
A412/100A	NGA4120100HSOCA	3354	2992	2567	2301	1884	1487	1257	998	758	624	388	284
A412/120A	NGA4120120HSOCA	4296	3942	3330	2779	2260	1791	1494	1210	1014	846	460	332
A412/180A	NGA4120180HSOCA	5825	5395	4832	4360	3701	3130	2599	1993	1484	1203	702	519

Discharge data are also valid for other terminals.

## Battery Service – Energy Solutions

Keeping your business on the move

### GNB® is the Expert

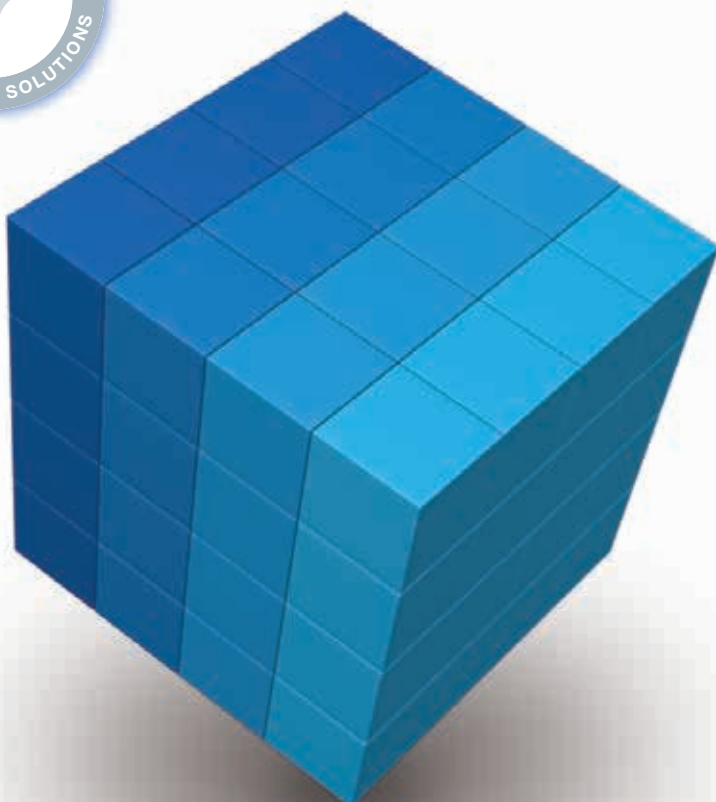
Who could do this job better than the professionals of a company with more than 100 years of experience in battery development, production and application?

Leave the responsibility for the maintenance of your batteries and chargers to the professionals: a GNB service contract provides you with exceptional economic advantages through time savings, cost savings and safety!



### Installation of Batteries and Systems for Network Power

- > Development of complete turnkey solutions from the design concept to installation and commissioning.
- > Installation according to legal and safety regulations including CE certification by approved installation technicians.
- > Training and certification of external installation technicians according to CE regulations.



- ✦ Inspection Contract
- ✦ Maintenance Contract
- ✦ Lifetime Warranty Contract
- ✦ Full Service Contract



»GNB Service – individualized, professional and all over Europe!«



**Exide Technologies**, with operations in more than **80 countries**, is one of the world's largest producers and recyclers of lead-acid batteries. Exide Technologies provides a comprehensive and customized range of stored electrical energy solutions. Based on **over 100 years of experience** in the development of innovative technologies, Exide Technologies is an esteemed partner of OEMs and serves the spare parts market for industrial and transportation applications.

**GNB® INDUSTRIAL POWER** – A division of Exide Technologies – offers an **extensive range of storage products and services**, including solutions for telecommunication systems, railway applications, mining, photovoltaic (solar energy), uninterrupted power supply (UPS), electrical power generation and distribution, fork lifts and electric vehicles.

**Exide Technologies** takes pride in its commitment to a better **environment**. Its Total Battery Management programme, (an integrated approach to manufacturing, distributing and recycling of lead-acid batteries), has been developed to ensure a safe and responsible life cycle for all of its products.



»The **next Level** of  
**Energy Management**«

**GNB® INDUSTRIAL POWER** provides long lasting energy concepts that combine efficiency with flexibility.