

Industrial Batteries / Network Power

Sonnenschein A400



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



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 CO₂ footprint



Specifications:

- > Nominal capacity 5.50 - 180 Ah C₁₀
- > 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



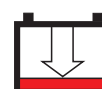
Grid plate



Recyclable



Valve regulated
lead-acid
batteries



Proof
against deep
discharge



Maintenance
free (no
topping up)

Sonnenschein A400

Technical data

Technical characteristics and data

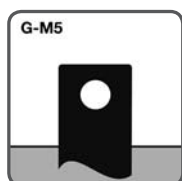
| Type | Part number | Nom. voltage V | Nominal capacity C ₁₀ 1.80 Vpc 20°C Ah | Max. load approx. A | Length (l) max. mm | Width (b/w) max. mm | Height up to top of cover (h1) max. mm | Height over terminals (h2) max. mm | Weight approx. kg | Internal resistance mOhm | Short circuit current A | Terminal |
|--------------|-----------------|----------------|---|---------------------|--------------------|---------------------|--|------------------------------------|-------------------|--------------------------|-------------------------|------------|
| 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 | 204 | 244 | 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 | 45.5 | 5.70 | 2118 | A-Terminal |
| A412/120 F10 | NGA4120120HSOFA | 12 | 120 | 770 | 513 | 223 | 195 | 223 | 46.0 | 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.

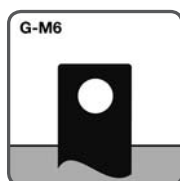
Container, approval, terminal and torque

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

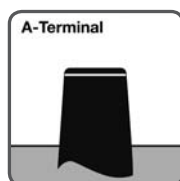
> **Approval:** - Underwriters Laboratories (UL), USA
- DIN/Gost/TÜV, Russia



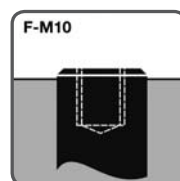
5 Nm



6 Nm



8 Nm

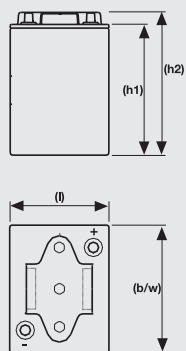


17 Nm

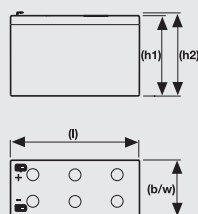
Sonnenschein A400

Drawings

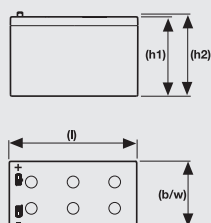
**A406/165 A
(A406/165 F10)***



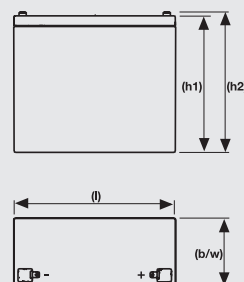
A412/5.5 SR



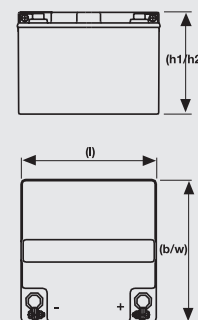
A412/8.5 SR



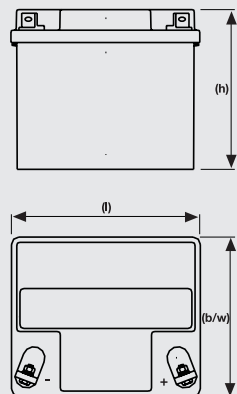
A412/12 SR



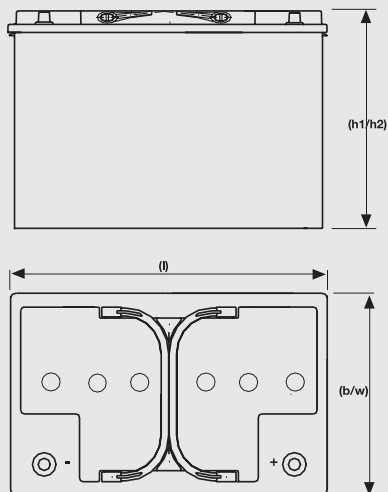
A412/20 G5



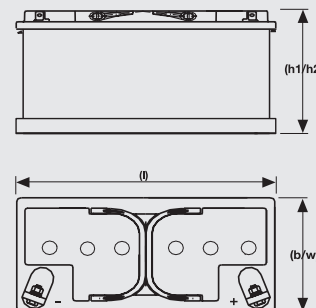
**A412/32 F10
(A412/32 G6)***



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



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



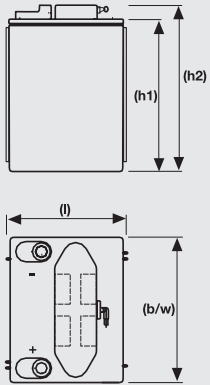
Not to scale!

* Dimensions are also valid for other terminals.

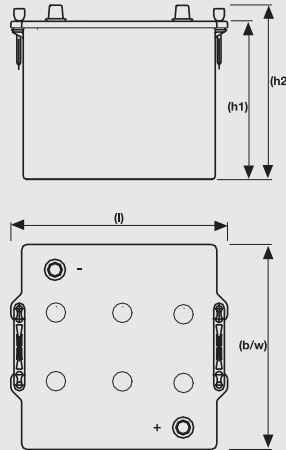
Sonnenschein A400

Drawings

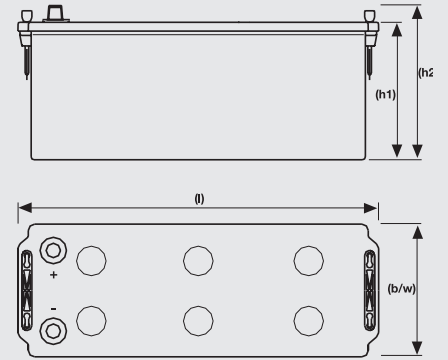
A412/85 F10



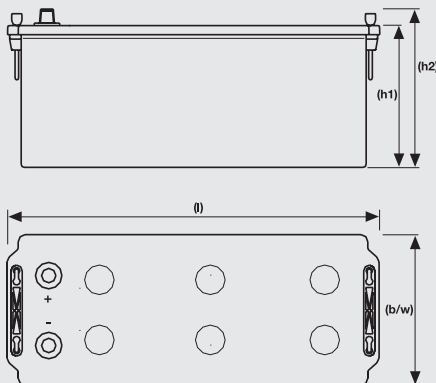
**A412/90 A
(A412/90 F10)***



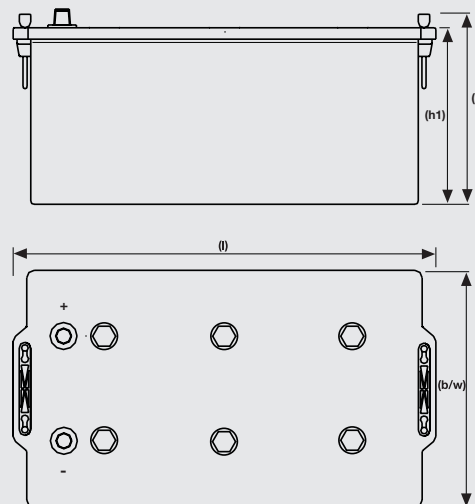
**A412/100 A
(A412/100 F10)***



**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 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 | 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 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 | 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 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 | 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.



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