



Industrial Battery Range

VRLA, Li-ion, NiCd, NiMH & Accessories Range Overview



The world's leading battery manufacturer

A **GS YUASA** Group Company

From the deep sea to outer space




The GS Yuasa Group consists of 65 subsidiaries and 33 affiliates in countries throughout the world.

For over 100 years, the GS Yuasa Group has continually contributed to economic development and the improvement of living standards through the development and manufacture of batteries, power supply systems and lighting equipment. We are a major force in the market as one of the world's leading manufacturers of industrial, automotive and motorcycle batteries. As a supplier of high-performance power supply systems, we help ensure the reliability of social infrastructure.

Responding to today's increasingly sophisticated needs our extensive range of next generation energy system lithium-ion batteries encompasses not only vehicle use but also products in a wide range of fields, from deep sea to aerospace, to meet the ever more sophisticated needs of the times.

Throughout its long history, the GS Yuasa Group has worked to create innovative technology. This commitment serves as the foundation for our continuing efforts to explore new possibilities in the field of electrical energy under a corporate vision expressed in the words "Innovation and Growth".

GS Yuasa Europe

- 1 GS Yuasa Battery Europe Ltd.
Ebbw Vale
- 2 GS Yuasa Battery Sales UK Ltd.
Swindon
- 3 GS Yuasa Battery Germany GmbH.
Düsseldorf
- 4 GS Yuasa Battery France S.A.
Lyon
- 5 GS Yuasa Battery Italy Srl.
Milan
- 6 GS Yuasa Battery Iberia S.A.
Madrid
-  GS Yuasa Battery Manufacturing UK Ltd.
Ebbw Vale



For over 30 years, GS Yuasa Battery Europe Ltd have been Europe's leading battery supplier.

From sales and distribution centres in Swindon, Milan, Lyon, Madrid and Düsseldorf, GS Yuasa supply European markets with an extensive range of high-quality energy storage and network stabilisation solutions.

Supported by experienced Quality Assurance, Technical Support, Marketing and Customer Service teams, our industry leading service and distribution network continues to set new standards in customer care, choice and year-round availability.

Furthermore, GS Yuasa can design and project manage custom battery systems.

Whatever the application, GS Yuasa have a solution to suit any requirements.

UK Manufacturing

GS Yuasa Battery Manufacturing UK Ltd is a large state of the art manufacturing facility in Ebbw Vale, Wales, UK. Production began at the site in 1982 and since then well over 80 million batteries have been produced ranging in capacity from 0.8 to 540 ampere hours.

Over 60% of products are exported, mainly within Europe. The facility produces four main product ranges - NPL, EN, ENL and SWL.



Common applications

Uninterruptible Power Supply (UPS)

Ranging in size from desk top units to large plant room installations, UPS's are a no-break backup power supply for essential equipment. Yuasa batteries can be sized to give the autonomy and load required for any project.

Batteries typically used:

| | | | | |
|-----|-----|-----|---------|-----|
| NP | NPW | SW | ENL | SLR |
| NPL | RE | SWL | ENL FT | |
| NPH | REW | EN | Lithium | |



Telecoms

Broadband, land line and mobile providers have equipment that needs battery backup power in the event of a mains failure. Whether in central systems or remote cabinets Yuasa batteries are trusted by providers worldwide.

Batteries typically used:

| | | | |
|-----|-----|--------|-----|
| NP | REW | EN | FXH |
| NPL | SW | ENL | SLR |
| RE | SWL | ENL FT | |



Renewable Energy

Solar, wind and wave energy is not always produced at times of maximum requirement. Yuasa batteries allow energy to be stored at times of low demand and then released into the grid when demand is high.

Batteries typically used:

| | | | | |
|-----|-----|--------|-----|---------|
| NP | REC | ENL FT | SLE | Lithium |
| NPC | ENL | FXH | SLR | |

Fire & Security

Even the most advanced security systems are only as good as the backup batteries supporting them. When an emergency arises, Yuasa standby batteries can protect homes and businesses against crime and fire.

Batteries typically used:

| | | |
|----|-----|----|
| NP | NPL | RE |
|----|-----|----|



Golf & Mobility



Golf and mobility equipment requires batteries to be charged and then used to power the equipment. Yuasa produce specialised cyclic battery types to give maximum performance for hundreds of charge/discharge cycles.

Batteries typically used:

NPC REC



Emergency Lighting



Emergency lighting is required in commercial buildings. In the event of a mains failure, standby batteries provide light for safe evacuation. Yuasa NiCd, NiMH and VRLA batteries exceed common 3 hour run-time requirements.

Batteries typically used:

NiMH NPL REC
NiCd NPC ENL
NP RE ENL FT



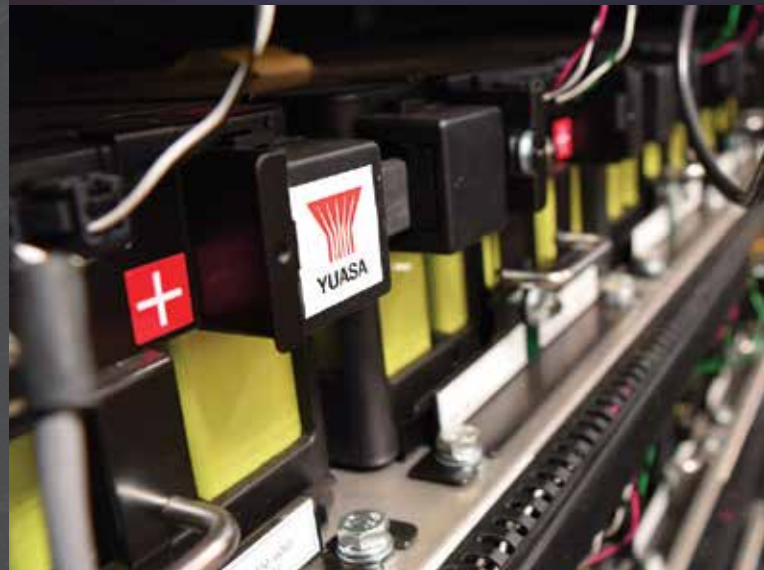
Energy Storage



Businesses are usually charged on peak power demand. Load-shedding allows large cost savings by charging batteries during low demand and injecting this stored energy back into business load at times of high demand.

Batteries typically used:

NPL REC ENL FT SLE Lithium
NPC ENL FXH SLR



Floor Cleaning & Aerial Access



Applications where deep discharges and harsh operating conditions are common, need a specialist battery solution. The Yuasa Pro-Spec range have excellent resilience against plate corrosion and deep discharge.

Batteries typically used:

Pro-Spec



Yuasa Industrial Batteries

To help with battery selection, and due to different application and operational requirements, every Yuasa industrial battery has been designated with a Eurobat classification or Yuasa cyclic life tag.

Eurobat is a European organisation that has produced a guide to VRLA batteries. Within this guide there are 4 design life categories. Yuasa has used the test methods as set out in an official standard, BS EN60896-21/21 to designate each battery range into one of the categories.

3 to
5 year
EUROBAT
classification
Standard Commercial

6 to
9 year
EUROBAT
classification
General Purpose



NP Series page 8

- Guaranteed capacity
- Yuasa quality assurance
- VDS approved
- 6 & 12 Volt types
- 0.8Ah to 65Ah
- Standby & light cyclic use

RE Series page 9

- Guaranteed capacity
- Yuasa quality assurance
- VDS approved
- Flame retardant case
- 12 Volt
- 5Ah to 12Ah
- Standby & light cyclic use

NPL Series page 10

- 6 & 12 Volt types
- 24Ah to 200Ah
- Standby use

10 to
12 year
EUROBAT
classification
Long Life



SWL Series page 11

- 6 & 12 Volt types
- 24Ah to 180Ah
- Standby use

10 to
12 year
EUROBAT
classification
Long Life



EN Series page 12

- 2, 4 & 6 Volt types
- 80Ah to 540Ah
- Standby use

Over
12 year
EUROBAT
classification
Very Long Life



ENL Series page 13

- 2, 4 & 6 Volt types
- 80Ah to 540Ah
- Standby use

Over
12 year
EUROBAT
classification
Very Long Life

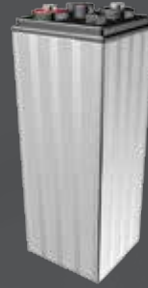




FXH Series

page 14

- 12 Volt
- 45Ah to 200Ah
- Standby use



SLE & SLR Series

page 15

- 2 Volt
- 500Ah to 1000Ah
- Heavy duty cyclic use



REC Series

page 16

- 12 Volt
- 10Ah to 80Ah
- Cyclic use



NPC Series

page 17

- 12 Volt
- 24Ah to 100Ah
- Cyclic use



Lithium Series

page 19

- 3.7 to 50.4 Volt
- 5Ah to 47.5Ah
- Standby & cyclic use



NiCd & NiMH

page 20

- 1.2 Volt
- 50mAh to 13Ah
- General use



Pro-Spec

page 21

- 6, 8 & 12 Volt types
- 150Ah to 260Ah
- Deep cyclic use



Accessories

page

- Racking & Site Services 22
- Yu-Power Chargers 23
- Temperature Monitoring 23
- YSP-117 & Hioki BT3554 Testers 24

Eurobat classification or Yuasa cyclic design life assumes that the battery is operated in normal conditions at 20°C and in accordance with Yuasa recommended operating guidelines.

Yuasa cyclic design life assuming 50% depth of discharge.

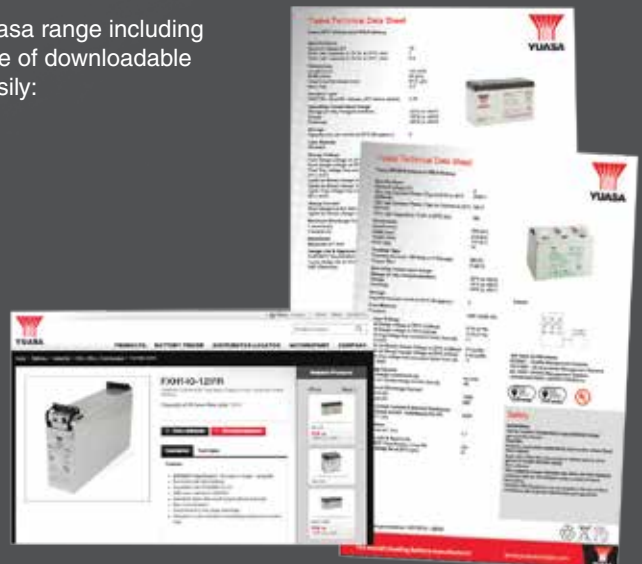


www.yuasa.com

Yuasa's innovative website is mobile-ready and features the entire Yuasa range including specifications, part numbers and photographs. It also includes a range of downloadable brochures, resources, data sheets and guides and allows users to easily:

- Find the right battery and compare products
- Search for local distributors
- Access detailed technical information and guides
- Download dynamic technical data sheets
- Calculate UPS system size requirements
- Keep up to date with the latest from Yuasa

Features every Yuasa industrial, automotive and motorcycle product with full specifications and pictures.



NP Series

Valve Regulated Lead-Acid Batteries



Features

- Lead calcium grids for extended life
- Superb recovery from deep discharge
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Multipurpose: Float or light cyclic use
- Can be used in any orientation excluding continuous inverted use
- Application specific designs

Applications

Ideal for standby and light cyclic applications including:

- Fire and security systems
- Emergency lighting
- Solar and wind
- UPS
- Toys



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) |
|------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±1) | Width (±1) | Overall Height (±2) | | | | | |
| NP1-6 | 6 | 1.0 | 0.93 | - | 51.0 | 42.5 | 54.5 | 0.25 | 75.0 | 30.0 | A | 5 |
| NP1.2-6 | 6 | 1.2 | 1.1 | - | 97.0 | 25.0 | 54.5 | 0.31 | 60.0 | 36.0 | A | 1 |
| NP2.8-6 | 6 | 2.8 | 2.5 | - | 134 | 34.0 | 64.0 | 0.57 | 30.0 | 84.0 | A | 1 |
| NP4-6 | 6 | 4.0 | 3.7 | - | 70.0 | 47.0 | 105.5 | 0.87 | 20.0 | 120 | A | 5 |
| NP7-6 | 6 | 7.0 | 6.5 | - | 151 | 34.0 | 97.5 | 1.32 | 12.0 | 210 | A | 1 |
| NP10-6 | 6 | 10.0 | 9.2 | - | 151 | 50.0 | 97.5 | 1.93 | 8.0 | 300 | A | 1 |
| NP12-6 | 6 | 12.0 | 11.1 | - | 151 | 50.0 | 97.5 | 2.05 | 7.0 | 360 | C | 1 |
| NP0.8-12 | 12 | 0.8 | 0.74 | - | 96.0 | 25.0 | 61.5 | 0.35 | 180 | 24.0 | H | 6 |
| NP1.2-12 | 12 | 1.2 | 1.1 | - | 97.0 | 48.0 | 54.5 | 0.58 | 110 | 36.0 | A | 3 |
| NP2-12 | 12 | 2.0 | 1.86 | - | 150 | 20.0 | 89.0 | 0.7 | 68.0 | 60.0 | B | 7 |
| NP2.1-12 | 12 | 2.1 | 1.9 | - | 178 | 34.0 | 64.0 | 0.82 | 65.0 | 63.0 | A | 1 |
| NP2.3-12 | 12 | 2.3 | 2.1 | - | 178 | 34.0 | 64.0 | 0.95 | 65.0 | 69.0 | A | 1 |
| NP2.8-12 | 12 | 2.8 | 2.5 | - | 134 | 67.0 | 64.0 | 1.12 | 60.0 | 84.0 | A | 3 |
| NP3.2-12 | 12 | 3.2 | 2.9 | - | 134 | 67.0 | 64.0 | 1.2 | 50.0 | 96.0 | A | 3 |
| NP4-12 | 12 | 4.0 | 3.7 | - | 90.0 | 70.0 | 106 | 1.75 | 40.0 | 120 | A | 1 |
| NP7-12(L) | 12 | 7.0 | 6.4 | - | 151 | 65.0 | 97.5 | 2.2 | 23.0 | 210 | A/C | 4 |
| NP12-12 | 12 | 12.0 | 11.1 | - | 151 | 98.0 | 97.5 | 4.05 | 16.0 | 360 | C | 4 |
| NP17-12I | 12 | 17.0 | 15.7 | - | 181 | 76.0 | 167 | 6.1 | 15.0 | 510 | D | 2 |
| NP18-12B | 12 | 17.2 | 16.0 | - | 180 | 76.0 | 167 | 6.2 | 15.0 | 540 | G | 2 |
| NP24-12I | 12 | 24.0 | 22.3 | - | 166 | 175 | 125 | 9 | 11.0 | 500 | D | 2 |
| NP38-12I | 12 | 38.0 | 35.3 | - | 197 | 165 | 170 | 14.2 | 9.0 | 500 | D | 2 |
| NP65-12I | 12 | 65.0 | 60.5 | - | 350 | 166 | 174 | 23.0 | 7.0 | 800 | E | 2 |



NPH & NPW Series

High Rate NP Batteries

| | | | | | | | | | | | | |
|-------------|----|------|------|-------|------|------|------|------|------|------|---|---|
| NPH2-12FR | 12 | 2.1 | 2.0 | - | 68.0 | 51.0 | 88.0 | 0.84 | 66.0 | 60.0 | A | 2 |
| NPH3.2-12 | 12 | 3.3 | 3.0 | - | 134 | 67.0 | 64.0 | 1.4 | 35.0 | 96.0 | A | 3 |
| NPH5-12(FR) | 12 | 5.0 | 4.8 | 34.0 | 90.0 | 70.0 | 106 | 1.85 | 25.0 | 150 | C | 1 |
| NPH12-12 | 12 | 12.0 | 11.1 | 70.0 | 151 | 98.0 | 97.5 | 4.1 | 16.0 | 360 | C | 4 |
| NPH18-12B | 12 | 20.0 | 18.7 | 115.2 | 181 | 76.0 | 167 | 6.3 | 7.9 | 540 | G | 2 |
| NPW45-12 | 12 | 8.5 | 7.42 | 40.0 | 151 | 65.0 | 97.5 | 2.7 | 24.0 | 105 | C | 4 |



yuasa.co.uk/NP
For more information
and technical data

RE Series

Valve Regulated Lead-Acid Batteries



Features


- Lead calcium grids for extended life
- Superb recovery from deep discharge
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Multipurpose: Float or light cyclic use
- Can be used in any orientation excluding continuous inverted use
- Application specific designs

Applications

Ideal for standby and light cyclic applications including:

- Fire and security systems
- Emergency lighting
- Solar and wind
- UPS
- Toys



| Model Name | Nominal Voltage (Volts) | Capacity | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) |
|---|-------------------------|----------------------------------|----------------------------------|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Length (±3) | Width (±3) | Overall Height (±3) | | | | | |
| RE5-12 | 12 | 5.0 | 4.6 | 90.0 | 70.0 | 106 | 1.96 | 42.0 | 120 | A | 1 |
| RE7-12L(FR) | 12 | 7.0 | 6.2 | 151 | 65.0 | 97.5 | 2.75 | 35.0 | 105 | C | 4 |
| RE12-12 | 12 | 12.0 | 10.56 | 151 | 98.0 | 97.5 | 4.15 | 15.0 | 180 | C | 4 |
|  REW45-12 | 12 | 8.0 | 6.96 | 151 | 64.0 | 97.5 | 2.7 | 24.0 | 105 | C | 4 |



Yuasa NP Series

Europe's leading standby batteries



- ✓ European market leader for over 30 years
- ✓ Proven track record of long-life performance
- ✓ The original and most reliable NP VRLA battery
- ✓ Dependable standby & light cyclic power
- ✓ Yuasa quality, reliability & performance

NPL Series

Valve Regulated Lead-Acid Batteries



Features

- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free
- Flame retardant to (UL94) HBØ
- FR option flame retardant to UL94:VØ (oxygen index 30)
- Manufactured in factories that comply with ISO 9001

- Complies with BS EN60896-21+22

Applications

- Security and Fire
- Emergency Lighting
- Telecoms
- UPS



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) |
|-------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|-------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±1) | Width (±1) | Overall Height (±2) | | | | | | |
| NPL24-12I | 12 | 24.0 | 21.1 | 93.2 | 166 | 175 | 125 | 9.0 | 9.5 | 500 | D | 2 | 2.5 |
| NPL38-12I | 12 | 38.0 | 33.4 | 147.5 | 197 | 165 | 170 | 14.0 | 7.5 | 500 | D | 2 | 2.5 |
| NPL65-12I | 12 | 65.0 | 57.2 | 252.4 | 350 | 166 | 174 | 23.0 | 5.0 | 800 | E | 2 | 4.8 |
| NPL78-12IFR | 12 | 78.0 | 68.6 | 302.9 | 380 | 166 | 174 | 27.5 | 4.5 | 800 | F | 2 | 6.0 |
| NPL100-12 | 12 | 100 | 88.0 | 388.4 | 407 | 172 | 240 | 39.0 | 4.0 | 1000 | I | 1 | 16.5 |
| NPL130-6IFR | 6 | 130 | 114.4 | 504.9 | 350 | 166 | 174 | 23.0 | 2.5 | 500 | E | 5 | 4.8 |
| NPL200-6 | 6 | 200 | 176 | 776.8 | 398 | 176 | 250 | 39.0 | 1.3 | 1500 | I | 5 | 16.5 |

 yuasa.co.uk/NPL
For more information and technical data



SWL Series

Valve Regulated Lead-Acid Batteries



Features

- Excellent high rate discharge efficiency, typically 40% higher than equivalent standard product
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free
- Standard case material is flame retardant to (UL94) HBØ
- FR option flame retardant to UL94:VØ (oxygen index 30)
- Manufactured in factories that comply with ISO9001
- Complies with BS EN60896-21+22

Applications

- UPS
- All other high rate discharge applications



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) |
|---------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|-------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±2) | Width (±2) | Overall Height (±2) | Weight - typical (kg) | | | | | |
| SW200 | 12 | 6.2 | 5.8 | 33.0 | 151 | 51.0 | 97.5 | 2.5 | 18.0 | 100 | A+C | 4 | - |
| SW280 | 12 | 7.8 | 7.0 | 47.0 | 151 | 65.0 | 97.5 | 2.6 | 14.0 | 150 | C | 4 | - |
| SWL750(FR) | 12 | 25.0 | 22.9 | 128 | 166 | 175 | 125 | 9.8 | 8.5 | 500 | D | 2 | 2.5 |
| SWL780V(FR) | 12 | 28.8 | 24.5 | 130 | 166 | 125 | 175 | 10.1 | 8.5 | 500 | D | 2 | 2.5 |
| SWL1100(FR) | 12 | 40.6 | 39.6 | 200 | 197 | 165 | 170 | 14.5 | 7.5 | 500 | D | 2 | 2.5 |
| SWL1800(FR) | 12 | 57.6 | 55.0 | 329 | 216 | 168 | 223 | 23.0 | 6.0 | 800 | E | 1 | 4.8 |
| SWL1850(FR) | 12 | 74.0 | 66.0 | 319 | 350 | 166 | 174 | 23.8 | 4.4 | 800 | E | 2 | 4.8 |
| SWL1850-6(FR) | 6 | 148 | 132 | - | 350 | 166 | 174 | 23.8 | 1.8 | 500 | E | 5 | 4.8 |
| SWL2250(FR) | 12 | 86.0 | 76.0 | 375 | 380 | 166 | 174 | 28.0 | 3.6 | 800 | F | 2 | 6.0 |
| SWL2300E(FR) | 12 | 80.0 | 78.0 | 400 | 261 | 168 | 225 | 28.0 | 5.0 | 800 | E | 1 | 4.8 |
| SWL2500E(FR) | 12 | 93.6 | 91.4 | 417 | 305 | 168 | 225 | 32.0 | 4.0 | 1000 | E | 1 | 4.8 |
| SWL2500TFR | 12 | 93.6 | 91.4 | 417 | 305 | 173 | 223 | 32.0 | 4.0 | 1000 | E | 1 | 4.8 |
| SWL2500-6(FR) | 6 | 184 | 180 | 867 | 297 | 168 | 231.5 | 32.5 | 1.7 | 1500 | E | 5 | 6.0 |
| SWL3300(FR) | 12 | 110.2 | 102 | 550 | 350 | 168 | 225 | 37.5 | 3.5 | 1100 | F | 1 | 6.0 |
| SWL3800(FR) | 12 | 135 | 124 | 701 | 350 | 173 | 272 | 48.0 | 3.0 | 1200 | F | 1 | 6.0 |
| SWL4250FR | 12 | 150 | 140 | 708 | 341 | 173 | 281 | 49.0 | 2.7 | 1200 | F | 1 | 6.0 |

 yuasa.co.uk/SWL
For more information and technical data



EN Series

Valve Regulated Lead-Acid Batteries



Features

- Unique mix and match parallel assembly allows extensive variations to network capacity
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

- Maintenance free
- Fully compliant with BS EN60896-21+22
- Case material ABS flame retardant UL94:V0

Applications

- UPS
- Telecoms
- Emergency lighting



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) |
|------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|-------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±2) | Width (±2) | Overall Height (±2) | | | | | | |
| EN80-6 | 6 | 86.4 | 81.6 | 336.1 | 200 | 208 | 238 | 23.0 | 2.0 | 1000 | F | 8 | 6.0 |
| EN100-4 | 4 | 108 | 102 | 420.1 | 200 | 208 | 238 | 17.5 | 1.5 | 1000 | F | 8 | 6.0 |
| EN100-6 | 6 | 108 | 102 | 420.1 | 200 | 208 | 238 | 23.0 | 2.0 | 1000 | F | 8 | 6.0 |
| EN160-4 | 4 | 172.8 | 163.2 | 672.2 | 206 | 210 | 240 | 24.0 | 1.0 | 1500 | F | 10 | 6.0 |
| EN160-6 | 6 | 172.8 | 163.2 | 672.2 | 305 | 210 | 240 | 35.0 | 1.5 | 1500 | F | 9 | 6.0 |
| EN180-6 | 6 | 193 | 181.4 | 767.7 | 305 | 210 | 240 | 38.0 | 0.5 (single cell) | 1500 | F | 9 | 6.0 |
| EN320-2 | 2 | 345.6 | 326.4 | 1344.4 | 206 | 210 | 240 | 24.0 | 0.5 (single cell) | 3000 | F | 10 | 6.0 |
| EN480-2 | 2 | 518.4 | 489.6 | 2016.7 | 305 | 210 | 240 | 35.0 | 0.5 (single cell) | 4500 | F | 11 | 6.0 |
| EN540-2 | 2 | 579 | 544.2 | 2303.1 | 305 | 210 | 240 | 38.0 | 0.5 (single cell) | 4500 | F | 11 | 6.0 |



ENL Series

Valve Regulated Lead-Acid Batteries



Features

- 15 year design life version of the EN series
- Unique mix and match parallel assembly allows extensive variations to network capacity
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

- Maintenance free
- Fully compliant with BS EN60896-21+22
- Case material ABS flame retardant UL94:V0

Applications

- UPS
- Telecoms
- Emergency lighting
- Renewable Energy



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) |
|-------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|-------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±1) | Width (±1) | Overall Height (±2) | | | | | | |
| ENL100-6 | 6 | 108 | 102 | 399.1 | 200 | 208 | 238 | 23.0 | 2.0 | 1000 | F | 8 | 6.0 |
| ENL160-6 | 6 | 172.8 | 163.2 | 638.6 | 305 | 210 | 240 | 35.0 | 1.5 | 1500 | F | 9 | 6.0 |
| ENL320-2 | 2 | 345.6 | 326.4 | 1277.2 | 206 | 210 | 240 | 24.0 | 0.5 (single cell) | 3000 | F | 10 | 6.0 |
| ENL480-2 | 2 | 518.4 | 489.6 | 1915.8 | 305 | 210 | 240 | 35.0 | 0.5 (single cell) | 4500 | F | 11 | 6.0 |
| ENL100-12FT | 12 | 108 | 102 | N/A | 558 | 125 | 235 | 41.0 | 7.5 | 500 | F | 3 | 6.0 |



FXH Series

Valve Regulated Lead-Acid Batteries



Features

- Front terminal connection for ease of installation and maintenance
- Low discharge rate for long shelf life
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency
- Maintenance free

- Case material ABS flame retardant UL94:V0
- BS EN60896-2 compliant

Applications

- UPS
- Telecoms
- Emergency lighting



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) Terminal / Adaptor |
|---------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|--------------------------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±3) | Width (±3) | Overall Height (±3) | | | | | | |
| FXH45-12IFR | 12 | 46.4 | 44.6 | 184.3 | 278 | 103 | 197 | 15.0 | 4.7 | 400 | E/D | 3 | 5.4/3 |
| FXH90-12IFR | 12 | 96.8 | 89.8 | 335 | 395 | 105 | 255 | 30.0 | 3.4 | 540 | F/E | 3 | 11.9/5.4 |
| FXH100-12IFR | 12 | 101.2 | 98.4 | 396 | 508 | 106 | 236 | 34.9 | 3.5 | 540 | E/E | 3 | 5.4/5.4 |
| FXH100S-12IFR | 12 | 110.4 | 100 | 396 | 395 | 106 | 290 | 34.0 | 3.5 | 600 | F/E | 3 | 11.9/5.4 |
| FXH140-12IFR | 12 | 164.6 | 154 | 595.4 | 556 | 123 | 295 | 51.0 | 2.7 | 540 | F/E | 3 | 11.9/5.4 |
| FXH155-12IFR | 12 | 165.6 | 155 | 509 | 415 | 174 | 258 | 50.5 | 2.8 | 930 | E | 3 | 5.4/N/A |
| FXH165-12IFR | 12 | 197 | 177 | 591 | 556 | 125 | 317 | 56.0 | 2.8 | 990 | F/E | 3 | 11.9/5.4 |
| FXH185-12IFR | 12 | 196 | 187 | 632.6 | 556 | 125 | 317 | 60.7 | 2.5 | 1000 | F/E | 3 | 11.9/5.4 |
| FXH190-12IFR | 12 | 210 | 200 | 782 | 604 | 123 | 320 | 67.0 | 2.5 | 1000 | F/E | 3 | 11.9/5.4 |
| FXH200-12IFR | 12 | 234.8 | 229 | 847 | 520 | 243 | 203 | 70.6 | 2.1 | 1000 | F | 3 | 11.9/N/A |

90° FXH Terminal Adaptors

for telecoms use

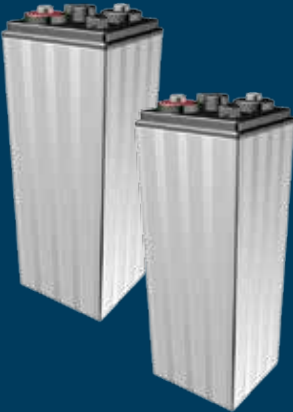
| | Battery Terminal | 90° Adaptor |
|---------------|------------------|-------------|
| FXH45-12IFR | M6 | M5 |
| FXH90-12IFR | M8 | M6 |
| FXH100-12IFR | M6 | M6 |
| FXH100S-12IFR | M8 | M6 |
| FXH140-12IFR | M8 | M6 |
| FXH155-12IFR | M6 | N/A |
| FXH165-12IFR | M8 | M6 |
| FXH185-12IFR | M8 | M6 |
| FXH190-12IFR | M8 | M6 |
| FXH200-12IFR | M8 | N/A |

yuasa.co.uk/FXH
For more information and technical data



SLE & SLR Series

Larger Cyclic Batteries



Features
 Easy installation and smaller footprint due to modular unit design

- Horizontal orientation
- Higher gas recombination facility due to silica gel/AGM construction
- Nano-Carbon negative plate for more efficient charging and less sulphation risk
- Higher capacity retention throughout service life

SLE Applications

- Large scale utility and commercial
- Renewable energy storage
- Load shedding
- Off grid

SLR Applications

- As SLE plus
- UPS
- Telecoms
- Emergency lighting

up to **3000** cyclic design life

UPS, Telecoms, Emergency lighting icons

up to **5500** cyclic design life

| Model Name | Nominal Capacity 10-hr rate (Ah) | Nominal Voltage (Volts) | Cycle Life at Depth of Discharge (DoD) | |
|------------|----------------------------------|-------------------------|--|------|
| | | | 50% | 70% |
| SLE-500 | 500 | 2 | 3000 | 2000 |
| SLE-1000 | 1000 | 2 | 3000 | 2000 |
| SLR-1000 | 1000 | 2 | 5500 | 5000 |

| Model Name | Length (mm) | Width (mm) | Total Height (mm) | Weight (kg) |
|------------|-------------|------------|-------------------|-------------|
| SLE-500 | 156 | 171 | 492 | 34.0 |
| SLE-1000 | 287 | 165 | 493 | 64.0 |
| SLR-1000 | 287 | 165 | 493 | 67.0 |

 yuasa.co.uk/SLE
 For more information and technical data



REC Series

Premium VRLA Cyclic Batteries



Features

- Double cycle life when compared to standard VRLA
- Durability for deep discharge
- Modern construction to considerably prolong service life
- Low discharge rate for long shelf life
- Maintenance free
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

Applications

- Golf and Mobility
- Solar and wind
- Renewable energy
- Professional tools
- Automatic guided vehicles
- Emergency lighting
- Measuring instruments



| Model Name | Nominal Voltage (Volts) | Capacity | | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) | Torque (Nm) |
|---------------|-------------------------|----------------------------------|----------------------------------|---|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|-------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Watts per cell 10 min to 1.6VPC at 20°C (watts) | Length (±3) | Width (±3) | Overall Height (±3) | | | | | | |
| REC10-12 | 12 | 10.0 | 9.0 | 51.8 | 151 | 65.0 | 115.5 | 3.2 | 17.6 | 150 | C | 4 | N/A |
| REC12-12 | 12 | 12.0 | 11.0 | 68.0 | 151 | 98.0 | 97.5 | 4.2 | 11.8 | 180 | C | 4 | N/A |
| REC14-12 | 12 | 13.0 | 11.6 | 78.3 | 151 | 98.0 | 97.5 | 4.2 | 10.1 | 195 | C | 4 | N/A |
| REC22-12B / I | 12 | 22.0 | 19.7 | 120.8 | 181 | 76.2 | 167 | 6.2 | 8.2 | 330 | G / D | 2 | 2.0-3.0 |
| REC26-12I | 12 | 26.0 | 23.5 | 145 | 166 | 175 | 125 | 9.0 | 8.8 | 330 | D | 2 | 2.0-3.0 |
| REC36-12I | 12 | 36.0 | 32.0 | 166.7 | 196 | 130 | 169 | 11.2 | 8.7 | 360 | D | 1 | 2.0-3.0 |
| REC50-12I | 12 | 50.0 | 40.0 | 233 | 197 | 165 | 175 | 15.3 | 5.7 | 400 | D | 2 | 2.0-3.0 |
| REC80-12I | 12 | 80.0 | 74.0 | 404 | 259 | 168 | 212.5 | 27.0 | 4.7 | 480 | E | 1 | 3.9-5.4 |

REC & NPC Carrying Cases

| Model | Description |
|----------|--|
| GB 12210 | Carrying case for REC22-12B / I |
| GB 12260 | Carrying case for REC26-12 & NPC24-12I |
| GB 12360 | Carrying case for REC36 |



NPC

VRLA Cyclic Batteries



Features

- Double cycle life when compared to standard VRLA
- Durability for deep discharge
- Modern construction to considerably prolong service life
- Low discharge rate for long shelf life
- Maintenance free
- Absorbed glass mat (AGM) technology assures no free electrolyte
- High gas recombination efficiency

Applications

- Golf and Mobility
- Solar and wind
- Renewable energy
- Professional tools
- Automatic guided vehicles
- Emergency lighting
- Measuring instruments



| Model Name | Nominal Voltage (Volts) | Capacity | | Dimensions (mm) | | | Weight - typical (kg) | Impedance at 1kHz mOhms | 1 Second rate (Amps) | Terminal Type | Layout (see page 18) |
|------------|-------------------------|----------------------------------|----------------------------------|-----------------|------------|---------------------|-----------------------|-------------------------|----------------------|---------------|----------------------|
| | | 20-hr rate to 10.5V at 20°C (Ah) | 10-hr rate to 10.8V at 20°C (Ah) | Length (±3) | Width (±3) | Overall Height (±3) | | | | | |
| NPC24-12I | 12 | 24.0 | 21.1 | 166 | 175 | 125 | 9.0 | 9.5 | 500 | D | 2 |
| NPC38-12I | 12 | 38.0 | 33.4 | 197 | 165 | 170 | 14.2 | 7.5 | 500 | D | 2 |
| NPC65-12I | 12 | 65.0 | 57.2 | 350 | 166 | 174 | 23.0 | 5.0 | 800 | E | 2 |
| NPC100-12 | 12 | 100 | 92.3 | 350 | 168 | 225 | 38.8 | 4.0 | 1100 | F | 1 |

REC & NPC Powakaddy Adaptors

| Model | Description |
|-------|--------------------------|
| PK22 | For REC22-12B |
| PK22I | For REC22-12I |
| PK26 | For REC26-12 & NPC24-12I |
| PK36 | For REC36 |

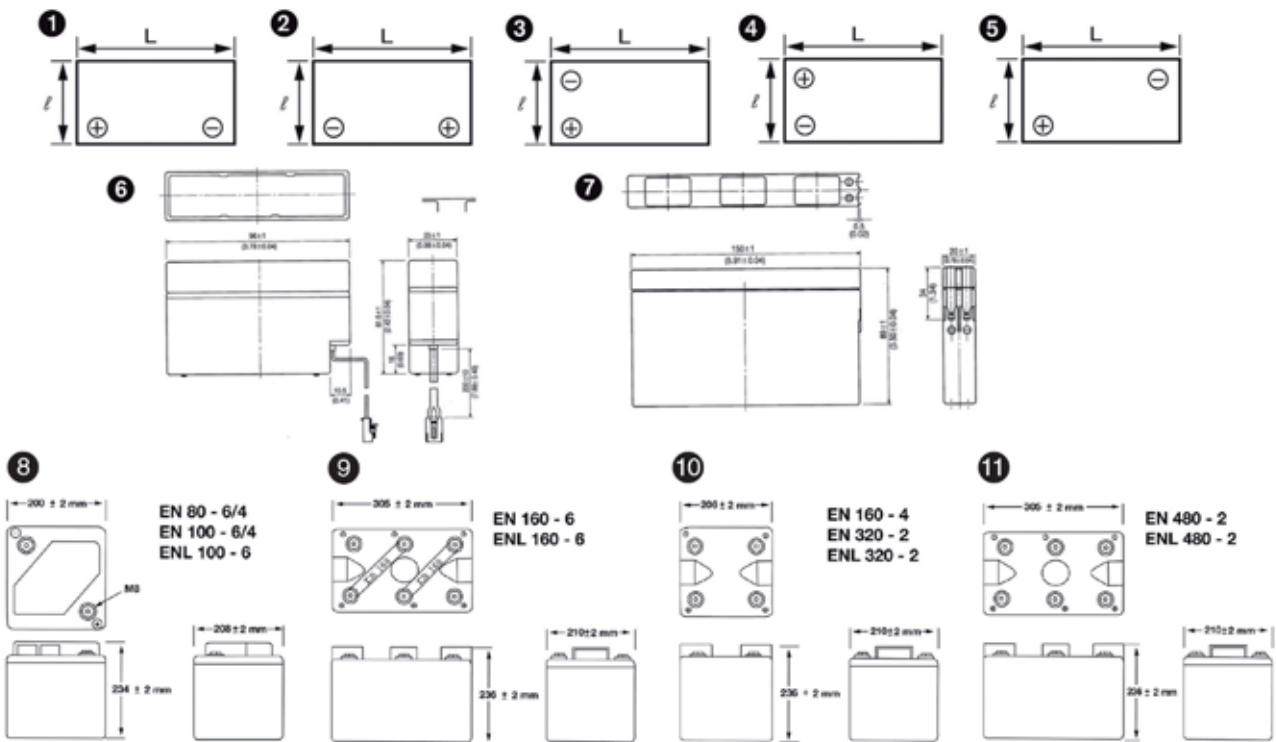


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For more information and technical data

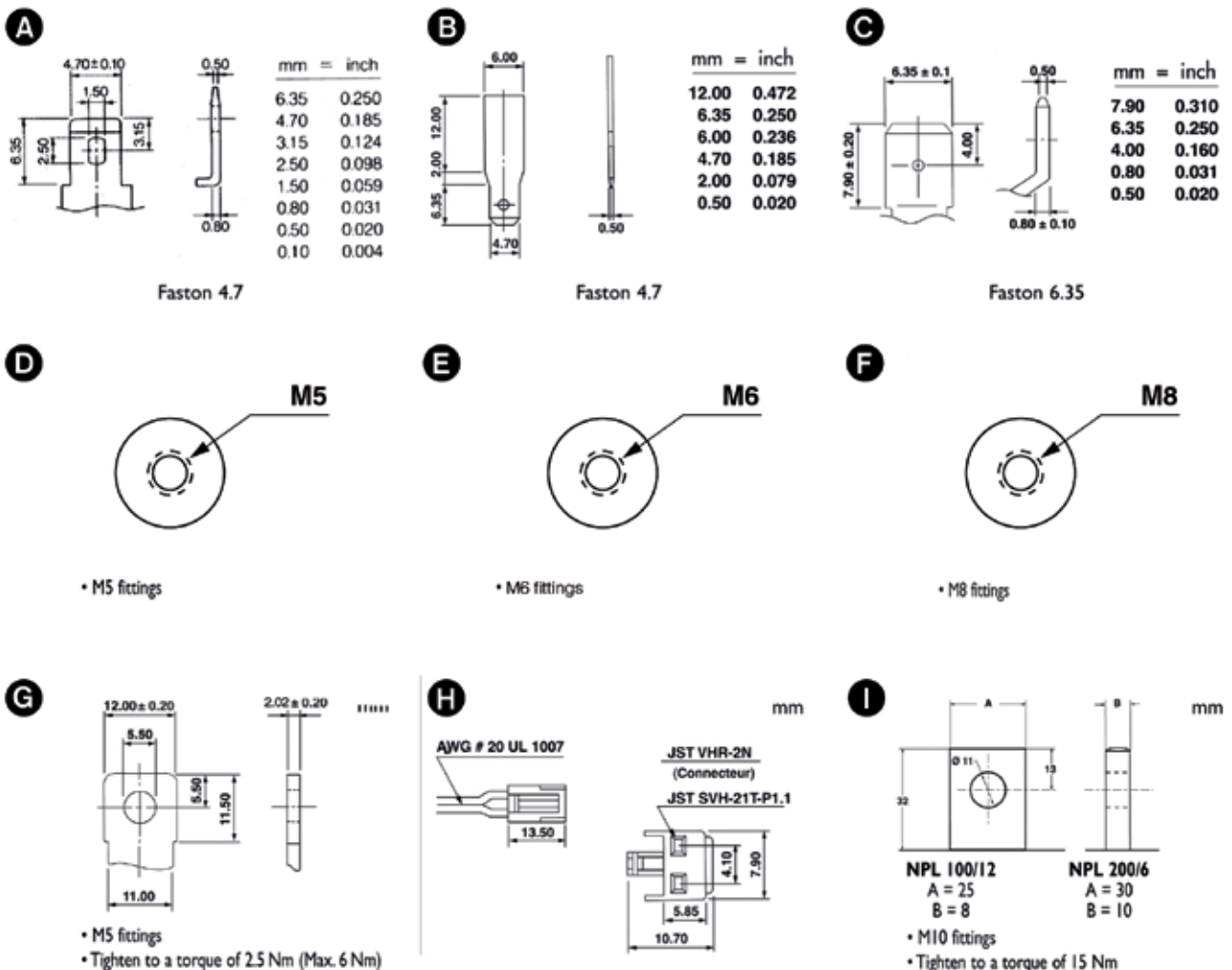


Layout & Terminal Diagrams

Layout



Terminals



Lithium Series

GS Yuasa LIM Li-ion Batteries



Features

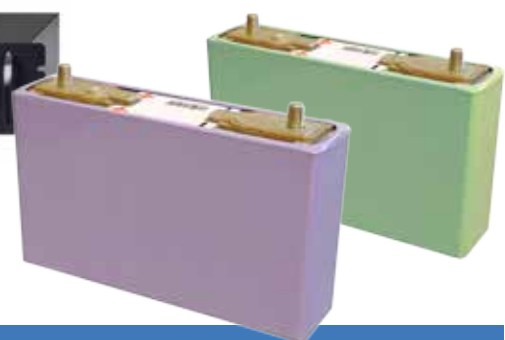
- Advanced maximum reliability system design
- Built in battery monitoring unit (ACS) constantly monitors the condition of each cell
- Outstanding cycle life of up to 3,000 cycles at 100% discharge
- High Charge-Discharge density capable of currents up to 600A
- Maintenance free
- Safe materials used in design and production

Applications

- High energy industrial systems
- UPS
- Energy storage
- Smart Grid
- AGV traction power



| Model Name | Nominal Voltage (Volts) | Operating Voltage Range (Volts) | Capacity 1-hr rate to 22.0V @ 25° C (Ah) | Charge Current Continuous (Amps) | Maximum Current Continuous (Amps) | Discharge Current Continuous (Amps) | Maximum Discharge Current (Amps) | Dimensions (mm) | | | Weight (kg) | Cycles |
|-----------------|-------------------------|---------------------------------|--|----------------------------------|-----------------------------------|-------------------------------------|----------------------------------|-----------------|------------|-------------|-------------|--------|
| | | | | | | | | Length (±3) | Width (±3) | Height (±3) | | |
| LIM25H-8S1-F1 | 28.8 | 22.0 - 33.6 | 25.0 | 100 | 600 (14s) | 100 | 600 (14s) | 440 | 219 | 128 | 17.5 | 20000 |
| LIM25H-8S2-F2 | 28.8 | 22.0 - 33.6 | 25.0 | 100 | 600 (14s) | 100 | 600 (14s) | 440 | 219 | 128 | 17.5 | 20000 |
| LIM25H-12S1-F1 | 43.2 | 33.0 - 50.4 | 25.0 | 100 | 600 (14s) | 100 | 600 (14s) | 620 | 219 | 128 | 28.0 | 20000 |
| LIM25H-12S1-F2 | 43.2 | 33.0 - 50.4 | 25.0 | 100 | 600 (14s) | 100 | 600 (14s) | 617 | 219 | 128 | 27.5 | 20000 |
| LIM5H-10P1-W1 | 36.0 | 24.0 - 42.0 | 5.0 | 50.0 | 200 (3s) | 50 | 200 (3s) | 245 | 131 | 110 | 4.5 | 20000 |
| LIM40E-13T1 | 38.0 | 35.8 - 53.3 | 38.0 | 40.0 | 100 (60s) | 40 | 600 (60s) | 385 | 450 | 130 | 28.0 | 11000 |
| LIM50EN-8S2-F2 | 29.6 | 22.0 - 32.8 | 47.5 | 50.0 | 125 (60s) | 200 | 300 (60s) | 440 | 219 | 128 | 17.0 | 11000 |
| LIM50EN-12S2-F2 | 44.4 | 33.0 - 49.2 | 47.5 | 50.0 | 125 (60s) | 200 | 300 (60s) | 617 | 219 | 128 | 27.0 | 11000 |
| LIM50E-7G-C1 | 25.9 | 19.3 - 28.7 | 47.5 | 50.0 | 125 (60s) | 200 | 300 (60s) | 412 | 180 | 135 | 15.0 | 7500 |



Li-ion Battery Control Modules (LIBM)

- Monitors and controls the operation of up to 26 lithium ion modules
- Multiple LIBMs can be networked for larger system integration
- Provides full access to all cell data via RS485 and CANbus 2.0b ports
- 16 cell and monitoring system functions are checked continuously
- Status thresholds are configurable for all monitored parameters
- Warning and alarm outputs configurable via relay and opto-isolated NO and NC contacts
- State of Charge measured by voltage and current analysis
- On-board data logging capability
- Low power consumption at 24Vdc

NiCd & NiMH Battery Packs



Features

- Excellent cyclic performance
- Multiple pack configurations available for all cell types
- High temperature versions tested to ICEL 1010
- Three dimensional mesh structure
- Foamed Nickel technology allows higher capacity in smaller can sizes
- Maintenance free

Applications

Packs can be tailored to a wide range of smaller power applications, including:

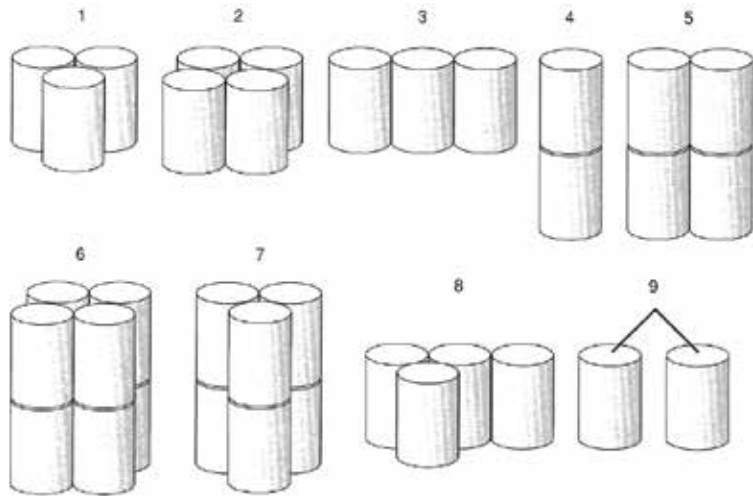
- Emergency lighting
- Toys
- Electronic equipment
- Testing equipment



Available Can Sizes

| Can Size | Fraction Code | Diameter (mm) | Height (mm) |
|----------|---------------|---------------|-------------|
| AA | | 14.1 | 48.0 |
| 7/5AA | R | 14.1 | 64.4 |
| 4/5AA | S | 14.1 | 42.6 |
| 2/3AA | X | 14.1 | 28.0 |
| 1/2AA | Z | 14.1 | 24.0 |
| 2/5AA | T | 14.1 | 21.0 |
| 1/3AA | Y | 14.1 | 16.5 |
| AAA | | 10.1 | 43.6 |
| 7/5AAA | R | 10.1 | 66.5 |
| 5/4AAA | V | 10.1 | 49.5 |
| 5/6AAA | | 10.1 | 41.6 |
| 2/3AAA | X | 10.1 | 27.8 |
| 1/2AAA | Z | 10.1 | 25.0 |
| 1/3AAA | Y | 10.1 | 15.0 |
| 1/4AAA | W | 10.1 | 12.0 |
| AAAA | | 7.9 | 41.5 |
| F | | 32.2 | 89.0 |
| 18650 | | 18.0 | 65.0 |
| 18670 | | 18.0 | 67.0 |
| A | | 16.8 | 49.0 |
| 7/5A | R | 16.8 | 65.9 |
| 4/5 A | S | 16.8 | 42.1 |
| 1/2A | Z | 16.8 | 28.0 |
| 2/5A | T | 16.8 | 21.5 |
| 1/3A | Y | 16.5 | 16.5 |
| AF | | 16.8 | 49.0 |
| 7/5AF | R | 16.8 | 65.9 |
| C | | 25.3 | 49.0 |
| 2/3C | X | 25.3 | 30.0 |
| 1/3C | Y | 25.3 | 19.1 |
| D | | 32.2 | 59.0 |
| 2/3D | X | 32.2 | 43.0 |
| 1/2D | Z | 32.2 | 35.0 |
| 1/3D | Y | 32.2 | 29.5 |
| SC | | 22.1 | 42.0 |
| 5/4SC | V | 22.1 | 49.0 |

Configuration Options



All Yuasa cylindrical cells can be connected together to form higher voltage/capacity packs. Dependent upon quantities required, almost any configuration can be achieved. Pack details are available on request.

Part numbers for packs incorporate all the information required to identify manufacturing details.

For example **3AAZ400LM3** translates as **3** x 'AA 1/2 size(Z)' cells **400mAh** with **Leads** and **Molex** plug and configured using style **3**.



CR123A & CR2 Non-rechargeable Lithium Batteries

| Model Name | Nominal Voltage (Volts) | Capacity (mAh) | Diameter (mm) | Height (mm) |
|---------------|-------------------------|----------------|---------------|-------------|
| CR2 - 1000 | 3 | 1000 | 15.6 | 27.0 |
| CR123A - 1700 | 3 | 1700 | 17.0 | 34.5 |

Pro-Spec

Multiple Purpose Deep Cycle Batteries



Features

- Deep cycle
- Vibration resistant
- Easy maintenance vent caps
- AGM/porous rubber separator construction to resist corrosion and reduce electrical resistance
- Enhanced life cycle compared to competitors
- Two terminal types available
- Extended service life

Applications

- Electric vehicles including:
- Golf carts
- Mobility vehicles
- Warehouse equipment including:
- Fork lifts
- Access platforms
- Floor cleaners



| Type | Model Name | Capacity | | | | Dimensions (mm) | | | Terminal Height | Weight (kg) |
|----------------|----------------|-------------|-------------|----------|-----------|-----------------|-------|--------|-----------------|-------------|
| | | @25A (Mins) | @75A (Mins) | 5HR (Ah) | 20HR (Ah) | Length | Width | Height | | |
| Deep Cycle 6V | DCB605-6(DT) | 383 | 105 | 175 | 210 | 259 | 179 | 245 | 273 | 27.0 |
| | DCB105-6(DT) | 447 | 115 | 185 | 225 | 259 | 179 | 245 | 273 | 28.6 |
| | DCB125-6(DT) | 488 | 132 | 195 | 240 | 259 | 179 | 245 | 273 | 30.7 |
| | DCB145-6(DT) | 530 | 145 | 215 | 260 | 259 | 179 | 264 | 292 | 33.0 |
| Deep Cycle 8V | DCB875-8(DT) | 295 | 75 | 145 | 170 | 262 | 181 | 245 | 273 | 29.0 |
| | DCB890-8(DT) | 340 | 90 | 155 | 190 | 262 | 181 | 245 | 273 | 31.6 |
| | DCB8125-8(DT) | 425 | 110 | 190 | 240 | 262 | 181 | 283 | 311 | 37.6 |
| Deep Cycle 12V | DCB1275-12(ET) | 290 | 70 | 125 | 150 | 329 | 181 | 245 | 276 | 37.5 |

DT - Dual Terminal



ET - Embedded Terminal



yuasa.co.uk/prospec
For more information and technical data



* Suggested cyclic life based on 0.25C₃ 3 hour discharge - 0.18C₃ hour charge

Racking & Site Services

Yuasa Technical Department



The GS Yuasa Battery Sales UK Ltd Technical Department provides a full battery design and quotation service, including:

- **Battery sizing**
- **Open style or clad racks, cubical design & supply**
- **Gas & heat calculations**
- **AutoCAD drawings**
- **Battery system testing**

To discuss your project or requirements please contact us on **01793 833555** or **enquiries@yuasaeurope.com**



Battery Sizing

Utilising Yuasa's range of VRLA batteries, the latest design software and extensive technical expertise, our engineers will find the best battery solution tailored to your requirements.

Battery Containment

GS Yuasa have a full complement of battery racking solutions available. Our popular open or clad steel flat pack racking can be built to specification. Options including colour, tier heights, leg extensions, seismic strengthening and many more.

Gas & Heat

We can provide full calculations relating to heat output and hydrogen gas emissions of any Yuasa battery system.

Drawings

Using AutoCAD software, our engineers can provide detailed rack and battery layout drawings for your project.

Install

GS Yuasa can quote for and arrange battery installation and commissioning. Our trained engineers and over 30 years of industrial battery experience will ensure your project goes smoothly.

System Testing

We offer a full battery testing service for battery installations of all sizes. Measuring every battery for impedance and voltage, a detailed report with findings and recommendations will be issued once completed.



Yu-Power®

Intelligent Chargers



Yu-Power® intelligent chargers utilise multi-stage proportional timing technology to ensure safe and efficient lead acid battery charging.

Proportional timing during the bulk charging mode ensures the best balance of maximum state of charge, without damaging the battery before switching to the float charging mode.

Once in float charge mode the charger will charge the battery and maintain it at 100% state of charge whilst using an ECO mode to save power.

| | |
|-------------------|---|
| YPC09A12MC | Yu-Power 900ma 12V Motorcycle Charger - UK Plug c/w YPCCLIPMC |
| YPC2A6 | Yu-Power 2A 6V Charger - UK/Euro Plug c/w YPCCLIPMC |
| YPC2A12 | Yu-Power 2A 12V Charger - UK/Euro Plug c/w YPCCLIPMC |
| YPC4A12 | Yu-Power 4A 12V Charger - UK/Euro Plug c/w YPCCLIP |
| YPC4A24 | Yu-Power 4A 24V Charger - UK/Euro plug c/w YPCCLIP |
| YPC8A12 | Yu-Power 8A 12V charger - UK/Euro Plug c/w YPCCLIP |
| YPCCLIP | Yu-Power 24" Cordset (Torberry to clips) |
| YPCCLIPMC | Yu-Power 24" Cordset (std trailer to clips) |
| YPCMOB | Yu-Power 6" Cordset (male mobility plug to Torberry) |
| YPCPK | Yu-Power 24" Cordset (Powakaddy to Torberry) |
| YPCRINGMC | Yu-Power 24" Fused Ring Cordset (std trailer to rings) |
| YPCTESTMC | Yu-Power LED Battery Tester (trailer plug c/w YPCRINGMC) |



yuasa.co.uk/chargers
For more information
and technical data

Yu-Power®

Battery Temperature Monitoring System YPCBM1

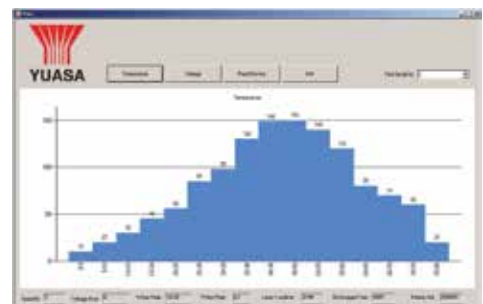


Hardware

- Continual monitoring with hourly logging of temperature and voltage
- 7.5 years of 1 hour rolling data storage
- Readable data set via 2.5mm output socket (lead available separately part code YPCBL1)
- Optional equipment available to allow for live working
- Unit dimensions: 40mm (±1) x 40mm (±1) x 14mm (±0.5)

Software

- Configurable to requirement
- Encoded against corruption
- Exportable to master documentation for further analysis
- Exportable to graphic displays
- Common file formats (.xls, .csv, plain text)



YSP-117

Conductance Tester

The YSP-117 Yuasa conductance tester provides a simple method to screen the state-of-health of 1.2Ah to 55Ah Valve Regulated Lead Acid (VRLA) batteries.

- 6 and 12 volts (nominal) batteries
- Voltage and conductance (Siemens) readings
- Applications include security systems, emergency lighting, mobility vehicles, desktop/compact uninterruptible power supplies (UPS)



Hioki BT3554

Impedance Tester

The Hioki BT3554 impedance tester provides complete diagnosis of VRLA batteries with a single device.

- 2, 4, 6 and 12 volts (nominal) batteries
- Up to 60 volt test range
- Designed for UPS, central lighting systems and other large backup battery installations
- Transfer saved data to tablet or PC via USB or Bluetooth
- Auto-hold and Auto-data storage functions
- Integral storage for up to 4800 sets of data
- Full range of accessories and spares (available separately)
- Supporting software included
- 10°C to 60°C measurement range
- Supplied with heavy-duty carry case
- Suitable for testing the full range of Yuasa industrial VRLA products



yuasa.co.uk/testers
For more information
and technical data



Standby & Cyclic Definitions

Standby

A float STANDBY application is one where a battery is maintained, using a float charge voltage, in a 100% state of charge ready to support an attached load immediately should the mains supply fail. The float charge voltage ensures the correct current flow to compensate for any self-discharge characteristic¹. A typical application for an industrial battery system would be an Uninterruptable Power Supply (UPS).

Yuasa consider a float standby application to be where a battery:

- Has no more discharges than is indicated in the table below.

| DOD² | Allowable Discharges per Year (average) |
|------------------------|--|
| 0.1 – 10% | 16-18 |
| or | |
| 11- 30% | 10-12 |
| or | |
| 31- 100% | 2-3 |

- Is expected to have prolonged periods of float charge, > 3 months, between discharges on average and at least 72 hours recharge between planned consecutive discharges (unless the battery you are using has repeat duty sizing for reduced charging times).
- Is expected to spend >99.9% of its life on float charge.
- Is never left in partially discharged condition.

Yuasa VRLA STANDBY Battery types: NP, NPL, SWL and EN

Cyclic

A CYCLIC application is one where a battery is discharged and charged on a regular and/or planned basis. A typical application for a CYCLIC industrial battery system would be an electrical power load shedding system. Yuasa consider a CYCLIC application to be where a battery:

- Is regularly³ subjected to charge times of <72 hours between discharges.
- Is regularly³ discharged to any depth of discharge.
- Following first use is subjected to periods longer than 1 month without charge in any 6 month period.
- Following first use is left in a partial state of discharge for >1 week.

Yuasa VRLA cyclic battery types: **NPC, REC, ENL, SLE**

Notes

1. Float charge can include intermittent charging patterns, having periods when fully charged batteries stand at open circuit. However, to ensure battery strings are correctly equalised for state of charge and charge acceptance characteristics, continuous float charge conditions should be applied for at least 6 months after commissioning or alterations to battery configuration.
2. Depth of Discharge (DOD). In regards to this document, 100% discharge is considered to be the end of the calculated autonomy period at any given load. A 10% discharge would be a discharge time of 10% of the calculated autonomy at a given load.
3. 'Regularly' could be considered as more than twice per month on average.

Golf, Mobility & Other Cyclic Use

Do:

- Follow the battery fitting instructions supplied by your equipment supplier.
- Charge your new battery for 12 hours before use, a battery can require up to 6 cycles of charge/discharge before it reaches its optimum performance. Always re-charge for a minimum of 12 hours after use.
- Ensure that your charger switches from bulk (usually indicated by a red or blue LED) to float charge (usually indicated by a Green LED) within 12 hours on charge. If this does not occur within 12 hours then disconnect battery from charge, use and then recharge.
- Store your battery in a fully charged state.
- Charge your battery as and when possible, regardless of state of charge.
- Maintain your equipment, follow lubrication advice and have your device regularly checked for correct running.
- Ensure that all running gear is free of grass, mud and other debris. Any extra resistance will exert extra load on the battery and will reduce run time.

Do not:

- Fully or partially discharge the battery and leave in a discharged state. This will cause internal damage to the battery and result in reduced life.
- Exceed the operational loading weight set by the product manufacture.
- Store the battery for long periods above an ambient temperature of 20 degrees centigrade.
- Drop or bump the battery – you will damage it.

Useful information:

- A battery is deemed to have reached end of life when it reaches 60% of original capacity.
- The life of the battery will depend on the depth of discharge and number of cycles performed.
- 1 cycle = 1 x discharge + 1 x charge.

Factors which can also affect life and run time are:

- Weight of the load carried.
- Number of times used per week (number of cycles).
- Length of time used per occasion (depth of discharge).
- Charging regime.
- Age and condition of your equipment, wheel bearing wear and motor condition can put extra load on the battery and reduce any autonomy time. New batteries fitted to new equipment will last longer than new batteries fitted to older equipment.
- Ambient temperature over 20°C.

Note: Yuasa REC & NPC batteries used in golf caddy applications are not designed to support a specific number of holes played during a round of golf. The guarantee of the product is solely based on the product premature failing due to a manufacturing or materials defect only. Yuasa do not manufacture an 18, 24, or 36 hole golf battery.



YUASA BATTERY

THE INDUSTRIAL SUPER POWER



Reliability, quality & performance

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